



PROPOSED Basin Plan

Water Act 2007

The Murray-Darling Basin Authority has prepared this proposed Basin Plan for the purpose of the consultation processes referred to in section 43 of the *Water Act 2007*.

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Acknowledgement of the Traditional Owners of the Murray-Darling Basin

The Murray-Darling Basin Authority acknowledges and pays its respect to the Traditional Owners and their Nations of the Murray-Darling Basin. The contributions of earlier generations, including the Elders, who have fought for their rights in natural resource management are also valued and respected.

The Authority recognises and acknowledges that the Traditional Owners and their Nations in the Murray-Darling Basin have a deep cultural, social, environmental, spiritual and economic connection to their lands and waters. The Authority understands the need for recognition of Traditional Owner knowledge and cultural values in natural resource management associated with the Basin. Further research is required to assist in understanding and providing for cultural flows. The Authority supports the belief of the Northern Murray-Darling Basin Aboriginal Nations and the Murray Lower Darling Rivers Indigenous Nations that cultural flows will provide beneficial outcomes for Traditional Owners.

The approach of Traditional Owners to caring for the natural landscape, including water, can be expressed in the words of Ngarrindjeri elder Tom Trevor: "our traditional management plan was don't be greedy, don't take any more than you need and respect everything around you. That's the management plan - it's such a simple management plan, but so hard for people to carry out."¹

This traditional philosophy is widely held by Traditional Owners and respected and supported by the Murray-Darling Basin Authority.

¹ Tom Trevor (2010) Murrundi Ruwe Pangari Ringbalin "River Country Spirit Ceremony: Aboriginal Perspectives on River Country".

Contents

Chapter 1— Introduction	1
Part 1— Preliminary	1
1.01 Name of Basin Plan.....	1
1.02 Making and effect of Basin Plan	1
1.03 Application of Basin Plan.....	1
1.04 Commencement.....	1
Part 2— Structure of the Basin Plan	1
1.05 Simplified outline	1
Part 3— Interpretation	3
1.06 Where terms are defined	3
1.07 Definitions.....	4
1.08 Basin Plan not to be inconsistent with Snowy Water Licence	10
1.09 Construction of provisions imposing obligations on States	10
Chapter 2— Basin water resources and the context for their use	11
2.01 Description located in Schedule 1	11
Chapter 3— Water resource plan areas and water accounting periods	12
Part 1— Preliminary	12
3.01 Simplified outline	12
3.02 Time at which area becomes a water resource plan area.....	12
3.03 Datasets for identification of water resource plan areas	12
3.04 Flexibility relating to boundaries of water resource plans.....	13
Part 2— Water resource plan areas	13
3.05 Water resource plan areas – surface water	13
3.06 Water resource plan areas – groundwater.....	14
3.07 Water resource plan areas – surface water and groundwater	15
Part 3— Water accounting periods	16
3.08 Water accounting period for each water resource plan area.....	16
Chapter 4— The identification and management of risks to Basin water resources	17
Part 1— Preliminary	17
4.01 Simplified outline	17
Part 2— Risks and strategies to address those risks	17
4.02 Risks to the condition, or continued availability, of Basin water resources, and consequential risks.....	17
4.03 Strategies to manage, or address, identified risks	18

4.04	Authority may publish guidelines	19
Chapter 5— Management objectives and outcomes to be achieved by the Basin Plan		20
5.01	Simplified outline	20
5.02	Management objective and outcomes for the Basin Plan as a whole	20
5.03	Management objectives and outcome in relation to environmental outcomes	20
5.04	Management objective and outcome in relation to water quality and salinity	21
5.05	Management objective and outcomes in relation to long-term average sustainable diversion limits	21
5.06	Management objectives and outcome in relation to the trading of tradeable water rights	22
Chapter 6— Water that can be taken		23
Part 1— Preliminary		23
6.01	Simplified outline	23
Part 2— Long-term average sustainable diversion limits		23
Division 1— Identification of SDL resource units		23
6.02	Identification of surface water SDL resource units	23
6.03	Identification of groundwater SDL resource units	24
Division 2— Long-term average sustainable diversion limits		24
6.04	Long-term average sustainable diversion limits	24
6.05	SDL resource unit shared reduction amount	25
6.06	Authority may express its view in relation to possible adjustments to SDLs	26
6.07	Review of SDLs in 2015	27
Part 3— Temporary diversion provision		27
6.08	Temporary diversion provision.....	27
Part 4— Method for determining compliance with the long-term annual diversion limit		28
Division 1— Register of take		28
6.09	Register of take	28
Division 2— Method for determining compliance		28
6.10	Method for determining compliance with a long-term annual diversion limit.....	28
6.11	Step 1: Calculation of annual permitted take and annual actual take	29
6.12	Step 2: Record the difference between annual actual take and annual permitted take	29
6.13	Step 3: Determine whether there is non-compliance	29

Part 5— Allocation of risks in relation to reductions in water availability	30
6.14 Risks arising from reduction in diversion limits	30
6.15 Risks arising from other changes to the Basin Plan.....	31
Chapter 7— Environmental watering plan	32
Part 1— Preliminary	32
7.01 Simplified outline	32
Part 2— Overall environmental objectives for the water-dependent ecosystems	33
7.02 Outline of this Part.....	33
7.03 Overall environmental objectives.....	33
7.04 Protection and restoration of water-dependent ecosystems	33
7.05 Protection and restoration of ecosystem functions of water-dependent ecosystems.....	34
7.06 Ensuring water-dependent ecosystems are resilient to risks and threats	35
Part 3— Targets by which to measure progress towards objectives	36
7.07 Targets by which to measure progress towards achieving objectives	36
7.08 Assessment of progress towards objectives in Part 2.....	36
Part 4— Environmental management framework	37
Division 1— Environmental management framework	37
7.09 The environmental management framework	37
Division 2— Preparation of long-term watering plans	37
7.10 Preparation of long-term watering plans	37
7.11 Long-term watering plans to be updated	38
7.12 Consultation requirements.....	38
7.13 Identification of environmental watering requirements	39
7.14 Identification of possible co-operative arrangements.....	39
7.15 Identification of long-term risks	39
7.16 Operational constraints.....	39
7.17 Supporting information	40
7.18 Advice from the Authority	40
7.19 Long-term watering plans may be published	40
Division 3— Annual environmental watering priorities for a water resource plan area	40
7.20 Annual environmental watering priorities for a water resource plan area.....	40
7.21 Consistency with long-term watering plans.....	40
7.22 Identification of priorities.....	40

7.23	Identification of possible co-operative arrangements.....	41
7.24	Information to be provided to Basin States to prepare annual environmental watering priorities.....	42
Division 4— Basin annual environmental watering priorities		42
7.25	Authority must prepare Basin annual environmental watering priorities.....	42
Part 5— Methods for identifying environmental assets and ecosystem functions and their environmental watering requirements		43
7.26	Environmental assets and ecosystem functions database.....	43
7.27	Method for identifying environmental assets and their environmental watering requirements.....	44
7.28	Method for identifying ecosystem functions that require environmental watering and their environmental watering requirements	44
7.29	Determination of the environmental watering requirements of environmental assets and ecosystem functions.....	45
Part 6— Principles and method to determine the priorities for applying environmental water		46
Division 1— Principles to be applied to determine priorities		46
7.30	Principles to be applied to determine the priorities for applying environmental water	46
7.31	Principle 1 – Consistency with principles of ecologically sustainable development and international agreements	46
7.32	Principle 2 – Consistency with objectives	46
7.33	Principle 3 – Flexibility and responsiveness	46
7.34	Principle 4 – Condition of environmental assets and ecosystem functions	47
7.35	Principle 5 – Likely effectiveness and related matters	47
7.36	Principle 6 – Risks and related matters	48
7.37	Principle 7 – Robust and transparent decisions.....	48
Division 2— Method to be used to determine priorities		48
7.38	Method to be used to determine priorities for applying environmental water	48
7.39	Determining the resource availability scenario.....	49
7.40	Operational and management considerations	49
Part 7— Principles to be applied in environmental watering		49
Division 1— Principles to be applied in environmental watering		49
7.41	Principles to be applied in environmental watering	49
7.42	Principle 1 – Basin annual environmental watering priorities	50
7.43	Principle 2 – Consistency with the objectives in Part 2	50
7.44	Principle 3 – Maximising environmental benefits	50

7.45	Principle 4 – Risks	51
7.46	Principle 5 – Cost of environmental watering.....	51
7.47	Principle 6 – Apply the precautionary principle	51
7.48	Principle 7 – Working effectively with local communities	51
7.49	Principle 8 – Adaptive management	51
7.50	Principle 9 – Relevant international agreements.....	52
7.51	Principle 10 – Other management and operational practices	52
Division 2— Reporting in relation to Basin annual environmental watering priorities		52
7.52	Reporting required where Basin annual environmental watering priorities not followed	52
Part 8— Planning for the recovery of additional environmental water		52
7.53	Planning for the recovery of additional environmental water.....	52
Chapter 8— Water quality and salinity management plan		54
Part 1— Preliminary		54
8.01	Simplified outline	54
Part 2— Key causes of water quality degradation in the Murray-Darling Basin		54
8.02	Types of water quality degradation and their key causes	54
Part 3— Water quality objectives for Basin water resources		55
8.03	Outline of this Part.....	55
8.04	Objectives for water-dependent ecosystems	55
8.05	Objectives for raw water for treatment for human consumption	55
8.06	Objective for irrigation water	56
8.07	Objective for recreational water quality.....	56
8.08	Objective – no deterioration of water quality.....	56
Part 4— Water quality targets		56
Division 1— Preliminary		56
8.09	Outline of this Part and purpose of targets	56
8.10	More stringent target applies	57
8.11	Certain target values to inform operational decisions	57
Division 2— Water quality targets for water-dependent ecosystems		58
8.12	Water quality targets for water-dependent ecosystems	58
Division 3— Water quality targets for raw water for human consumption		58
8.13	Water quality targets for raw water for treatment for human consumption	58
Division 4— Water quality targets for irrigation water		59
8.14	Water quality targets for irrigation water	59

Division 5— Water quality targets for recreational water	60
8.15 Water quality targets for recreational water	60
Division 6— Salinity targets	60
8.16 Salinity targets	60
8.17 Salt-load target	60
8.18 Salinity operational targets	61
Chapter 9— Water resource plan requirements	62
Part 1— Preliminary	62
9.01 Simplified outline	62
Part 2— Identification of water resource plan area and other matters	63
9.02 Identification of water resource plan area and water resources	63
9.03 Identification of SDL resource units and water resources	63
9.04 Water resource plan constituted by 2 or more instruments	63
9.05 Water resource plan to include index	64
9.06 Material not forming part of the water resource plan	64
9.07 Regard to other water resources	64
9.08 Obligations to be specified	64
9.09 Change in reliability	64
Part 3— Incorporation, and application, of the long-term annual diversion limit	65
Division 1— Water access rights	65
9.10 Water access rights must be identified	65
9.11 Identification of planned environmental water and register of held environmental water	65
Division 2— Take for consumptive use	66
9.12 Long-term annual diversion limits for each SDL resource unit to be specified	66
9.13 Maximum long-term annual average quantity of water that can be taken	66
9.14 Annual quantity of water permitted to be taken	67
9.15 Annual quantity of water that can be taken	67
9.16 Annual allocations must be determined	67
9.17 Matters relating to accounting for water	68
9.18 Limits on certain forms of take	68
9.19 Effects, and potential effects, on water resources of the water resource plan area	69
Division 3— Actual take	70
9.20 Determination of actual take must be specified	70

Part 4— The sustainable use and management of water resources	70
Division 1— Sustainable use and management	70
9.21 Sustainable use and management of water resources	70
Division 2— Surface water	70
9.22 Priority environmental assets and priority ecosystem functions	70
Division 3— Groundwater	71
9.23 Priority environmental assets dependent on groundwater	71
9.24 Groundwater and surface water connections.....	71
9.25 Productive base of groundwater	72
9.26 Environmental outcomes relating to groundwater.....	73
Division 4— How requirements have been met	73
9.27 Description of how requirements have been met.....	73
Part 5— Interception activities	74
9.28 Listing classes of interception activity	74
9.29 Monitoring impact of interception activities	74
9.30 Actions to be taken	75
Part 6— Planning for environmental watering	75
9.31 Planning for environmental watering.....	75
9.32 Enabling environmental watering between connected water resources.....	75
9.33 No net reduction in the protection of planned environmental water	76
Part 7— Water quality objectives	76
9.34 Water resource plan to include WQM Plan	76
9.35 WQM Plan to identify key causes of water quality degradation	76
9.36 WQM Plan to identify water quality target values.....	76
9.37 WQM Plan to identify measures	77
9.38 WQM Plan to identify locations of certain targets	78
9.39 Impact of WQM Plan on another Basin State	78
Part 8— Trade of water access rights	78
9.40 Application of Part	78
9.41 Circumstances in which conditions in section 11.23 are met	78
9.42 Circumstances in which conditions in section 11.24 are met	78
9.43 Circumstances in which conditions in section 11.25 are met	79
Part 9— Approaches to addressing risks to water resources	79
9.44 Definitions.....	79
9.45 Risk identification and assessment methodology	79

9.46	Description of risks and risk factors	80
9.47	Strategies for addressing risks	80
Part 10— Measuring and monitoring		81
9.48	Information relating to measuring take – water access entitlements	81
9.49	Improving measuring	81
9.50	Monitoring water resources	81
Part 11— Reviews of water resource plans		81
9.51	Review of water resource plans	81
9.52	Amendment of water resource plan	82
Part 12— Information used to prepare water resource plan		82
9.53	Best available information	82
9.54	Methods used to develop water resource plan	82
Part 13— Extreme events		82
9.55	Measures in response to extreme events	82
Part 14— Indigenous values and uses		83
9.56	Objectives and outcomes based on Indigenous values and uses	83
9.57	Consultation and preparation of water resource plan	83
9.58	Cultural flows	84
9.59	Retention of current protection	84
Chapter 10— Critical human water needs		85
Part 1— Preliminary		85
10.01	Simplified outline	85
10.02	Meaning of <i>water accounting period</i>	85
Part 2— Water required to meet critical human water needs		85
10.03	Amount of water required to meet critical human water needs (Act paragraph 86B(1)(a))	85
10.04	Conveyance water required to deliver water for critical human water needs (Act paragraph 86B(1)(b))	85
10.05	Water quality and salinity trigger points (Act paragraph 86B(1)(c))	86
Part 3— Monitoring, assessment and risk management		87
10.06	Process for assessing inflow prediction (Act paragraph 86C(1)(b))	87
10.07	Process for managing risks to critical human water needs associated with inflow prediction (Act paragraph 86C(1)(b))	87
10.08	Risk management approach for inter-annual planning (Act paragraph 86C(1)(c))	89
Part 4— Tier 2 water sharing arrangements		90

Division 1— When Tier 2 water sharing arrangements apply	90
10.09 Commencement of Tier 2 water sharing arrangements (Act paragraph 86D(1)(a))	90
10.10 Cessation of Tier 2 water sharing arrangements (Act paragraph 86D(1)(b))	91
Division 2— Tier 2 reserves policy	91
10.11 Reserves policy (Act paragraph 86D(1)(c))	91
10.12 Meeting the annual shortfall in conveyance water	91
10.13 Application of the conveyance reserve provisions of the Agreement.....	92
10.14 Arrangements for carrying water over in storage	92
Part 5— Tier 3 water sharing arrangements	92
10.15 Commencement of Tier 3 water sharing arrangements (Act paragraph 86E(1)(a))	92
10.16 Cessation of Tier 3 water sharing arrangements (Act paragraph 86E(1)(b))	93
Chapter 11— Water trading rules	95
Part 1— Preliminary	95
11.01 Simplified outline	95
11.02 Application of Chapter to certain water access rights	95
11.03 References to water delivery rights	95
11.04 Reference to a trade between places	95
11.05 Recovery of loss or damage	96
Part 2— Restrictions on trade of tradeable water rights	97
Division 1— Trade of water access rights	97
Subdivision A— All water resources – right to trade free of certain restrictions	97
11.06 Separate rights	97
11.07 Class of persons.....	97
11.08 Purpose for which water is used	97
11.09 Take and use of water after a trade	97
11.10 Use outside Murray-Darling Basin	98
11.11 Trade of water allocation which has been carried over	98
11.12 Access to carryover for traded water access rights	98
11.13 Overallocation	98
11.14 Level of use of water access right	98
Subdivision B— Additional rules relating to surface water	99
11.15 Free trade of surface water.....	99
11.16 Trade not to be subject to volumetric limit	99

11.17	Restrictions allowable for physical or environmental reasons.....	99
11.18	Basin States to notify the Authority of restrictions.....	100
11.19	Basin State may request Authority to make declaration.....	100
11.20	Exchange rates not to be used in a regulated system	101
11.21	Authority may permit exchange rates in limited circumstances	101
11.22	Restrictions on delivery of water under a tagged water access entitlement established after 21 October 2010	101
	Subdivision C— Additional rules relating to groundwater	102
11.23	Trade within a groundwater SDL resource unit.....	102
11.24	Trade between groundwater SDL resource units.....	103
11.25	Trade between groundwater and surface water.....	103
	Subdivision D— Miscellaneous	104
11.26	Restrictions allowable for breaches of State water management law	104
Division 2— Trade of water delivery rights held against irrigation infrastructure operators		104
11.27	No unreasonable restriction of trade of water delivery rights	104
11.28	When restriction of trade is unreasonable	104
11.29	Irrigation infrastructure operator must give reasons for refusing trade of water delivery right.....	105
11.30	Trade must not be made conditional on water delivery right.....	105
Part 3— Information about water delivery rights and irrigation rights		105
Division 1— General		105
11.31	Object of this Part.....	105
Division 2— Water delivery rights to be specified by irrigation infrastructure operators		106
11.32	Obligation on irrigation infrastructure operator to specify water delivery rights and give notice.....	106
11.33	Obligation on irrigation infrastructure operator to give notice if water delivery right is changed	106
Division 3— Irrigation rights to be specified by irrigation infrastructure operators		107
11.34	Obligation on irrigation infrastructure operator to specify irrigation rights and give notice	107
11.35	Obligation on irrigation infrastructure operator to give notice if irrigation right is changed.....	108
Part 4— Approval processes for trade of water access rights		108
Division 1— General		108
11.36	Object of this Part.....	108
Division 2— Approval authority's other activities		108

11.37	Approval authority must disclose interest before trade occurs....	108
11.38	Approval authority must disclose if it has been a party to a trade.....	109
11.39	Approval authority to give reasons for rejecting trade.....	109
Part 5— Information and reporting requirements		109
Division 1— General		109
11.40	Object of this Part.....	109
Division 2— Information about water access rights		109
11.41	Application of this Division.....	109
11.42	Information about water access rights to be made available	109
11.43	Types of information about water access rights.....	110
Division 3— Trading rules to be made available		111
11.44	Basin State must provide trading rules	111
11.45	An irrigation infrastructure operator must provide trading rules	111
Division 4— Trading prices to be made available		112
11.46	Price to be reported as a condition of approval of trade.....	112
Division 5— Allocation and policy information to be made available		112
11.47	Meaning of <i>water announcements</i> and <i>material effect</i>	112
11.48	Water announcements must be made generally available.....	113
11.49	Person not to trade if aware of water announcement before it is made generally available	113
Chapter 12— Program for monitoring and evaluating the effectiveness of the Basin Plan		114
Part 1— Preliminary		114
12.01	Simplified outline	114
12.02	Purpose of this Chapter	114
Part 2— Principles to be applied		115
12.03	Principles to be applied in monitoring and evaluating the effectiveness of the Basin Plan.....	115
Part 3— Basin Plan outcomes		116
12.04	Outcomes for the Basin Plan.....	116
Part 4— Reporting requirements		116
12.05	Reporting requirements for Basin States, the Department etc....	116
12.06	Agreements in relation to reporting requirements	116
12.07	Reporting requirements for the Director of Meteorology and ABARES.....	117
12.08	Guidelines for reporting requirements.....	117
12.09	Personal information not required.....	117

Part 5— Reviews of water quality targets and environmental watering plan	118
12.10 Purpose of reviews	118
12.11 Reviews of the water quality and salinity management plan targets	118
12.12 Reviews of the environmental watering plan.....	118
Part 6— Evaluation of Basin Plan	119
12.13 Authority's use of information to evaluate Basin Plan	119
12.14 Key evaluation questions.....	119
12.15 Evaluations to inform changes to Basin Plan.....	120
Schedule 1— Basin water resources and the context for their use	121
Schedule 2— Matters relating to surface water SDL resource units	142
Schedule 3— BDLs for surface water SDL resource units	149
Schedule 4— Matters relating to groundwater SDL resource units	172
Schedule 5— Criteria for identifying an environmental asset	187
Schedule 6— Criteria for identifying an ecosystem function	189
Schedule 7— Targets to measure progress towards objectives	190
Schedule 8— Key causes of water quality degradation	191
Schedule 9— Target values for target application zones	195
Schedule 10— Basin Plan outcomes and reporting requirements	207

Chapter 1—Introduction

Part 1—Preliminary

1.01 Name of Basin Plan

This instrument is the *Basin Plan 2012*.

1.02 Making and effect of Basin Plan

- (1) The Basin Plan is made under Part 2 of the Act.
- (2) This Basin Plan has the effect provided for in sections 34, 35, 36, 37, 86G and 86H of the Act.

1.03 Application of Basin Plan

The Basin Plan applies to Basin water resources.

Note: See section 4 of the Act for the meaning of **Basin water resources**.

1.04 Commencement

- (1) The Basin Plan, apart from Chapter 11, commences on the day after it is registered.
- (2) Chapter 11, apart from sections 11.15 to 11.19, commences on 1 July 2013.
- (3) Sections 11.15 to 11.19 commence on 1 July 2014.

Part 2—Structure of the Basin Plan

1.05 Simplified outline

- (1) The following table provides a summary of the Basin Plan:

SUMMARY OF THE BASIN PLAN		
	Title	Subject matter
Chapter 1	Introduction	The structure of the Basin Plan, and definitions of terms used in the Plan.
Chapter 2	Basin water resources and the context for their use	The description of Basin water resources and the context in which those resources are used (item 1 of the table in subsection 22(1) of the Act). The details are set out in Schedule 1.
Chapter 3	Water resource plan areas and water accounting periods	The identification of the particular areas that are to be water resource plan areas and the periods that are to be the water accounting periods for each of those areas (item 2 of the table in subsection 22(1) of the Act).

Chapter 1—Introduction
Part 2—Structure of the Basin Plan

Section 1.05

Chapter 4	The identification and management of risks to Basin water resources	The identification of the risks to the condition, or continued availability, of the Basin water resources and the strategies to be adopted to manage, or address, those risks (items 3 and 5 of the table in subsection 22(1) of the Act).
Chapter 5	Management objectives and outcomes to be achieved by the Basin Plan	The management objectives and outcomes to be achieved by the Basin Plan (item 4 of the table in subsection 22(1) of the Act).
Chapter 6	Water that can be taken	The long-term average sustainable diversion limits, the temporary diversion provisions, and the method for determining whether the long-term annual diversion limit has been complied with and the extent of any failure to comply with that limit (items 6, 7 and 8 of the table in subsection 22(1) of the Act). This Chapter also includes matters required by Division 4 of Part 2 of the Act which relate to the allocation of risks in relation to reductions in water availability.
Chapter 7	Environmental watering plan	The plan for the protection and restoration of the wetlands and other environmental assets of the Murray-Darling Basin; for the protection of biodiversity dependent on Basin water resources; and for achieving other environmental outcomes for the Murray-Darling Basin (item 9 of the table in subsection 22(1) of the Act).
Chapter 8	Water quality and salinity management plan	The key causes of water quality degradation in the Murray-Darling Basin. This Chapter also includes water quality and salinity objectives and targets for Basin water resources (item 10 of the table in subsection 22(1) of the Act).
Chapter 9	Water resource plan requirements	The requirements that a water resource plan must comply with for it to be accredited or adopted under Division 2 of Part 2 of the Act (item 11 of the table in subsection 22(1) of the Act).
Chapter 10	Critical human water needs	The arrangements for meeting critical human water needs (Part 2A of the Act).
Chapter 11	Water trading rules	The rules for the trading of tradeable water rights in relation to Basin water resources (item 12 of the table in subsection 22(1) of the Act).
Chapter 12	Program for monitoring and evaluating the effectiveness of the Basin Plan	The program that will be used to monitor and evaluate the effectiveness of the Basin Plan. Specific Commonwealth and Basin State reporting requirements are also included (item 13 of the table in subsection 22(1) of the Act).

Schedule 1	Basin water resources and the context for their use	The description of Basin water resources and the context in which those resources are used.
Schedule 2	Matters relating to surface water SDL resource units	Surface water SDL resource units and long-term average sustainable diversion limits for those units.
Schedule 3	BDLs for surface water SDL resource units	The BDL for each surface water SDL resource unit.
Schedule 4	Matters relating to groundwater SDL resource units	Groundwater SDL resource units; groundwater covered by those units; BDLs for those units; and long-term average sustainable diversion limits for those units.
Schedule 5	Criteria for identifying an environmental asset	Criteria for identifying an environmental asset.
Schedule 6	Criteria for identifying an ecosystem function	Criteria for identifying an ecosystem function.
Schedule 7	Targets to measure progress towards objectives	Targets by which to measure progress towards achieving the environmental objectives specified in Part 2 of Chapter 7.
Schedule 8	Key causes of water quality degradation	Key causes of water quality degradation.
Schedule 9	Target values for target application zones	Water quality targets that apply for target application zones.
Schedule 10	Basin Plan outcomes and reporting requirements	Outcomes against which the effectiveness of the Basin Plan will be assessed and the requirements relating to reporting on those outcomes.

- (2) Most Chapters are divided into Parts, Divisions and Subdivisions within the Chapter and these are made up of sections.
- (3) Each section is numbered with the number before the decimal point referring to the Chapter number (for example, section 5.04 is the fourth section in Chapter 5).

Part 3—Interpretation

1.06 Where terms are defined

Many terms used in the Basin Plan have special meanings. Some are defined in the Act, and have the same meaning in the Basin Plan unless it provides otherwise. See also the list of definitions in section 1.07.

Note: See section 13 of the *Legislative Instruments Act 2003*.

1.07 Definitions

In the Basin Plan:

ABARES means the Australian Bureau of Agricultural and Resource Economics and Sciences established by the Commonwealth.

Act means the *Water Act 2007*.

advance means an advance determined by the Authority in accordance with clause 102C of the Agreement or clause 7 of Schedule H to the Agreement.

ADWG means the *Australian Drinking Water Guidelines* published by the National Health and Medical Research Council and the Natural Resource Management Ministerial Council in 2004.

allocation announcement means an announcement specifying the volume of water allocated to water access entitlements.

Note: An announcement could increase, decrease or leave unchanged the volume of water allocated.

annual actual take has the meaning given by section 6.11.

annual environmental watering priorities has the meaning given by section 7.20.

annual permitted take has the meaning given by section 6.11.

ANZECC Guidelines means the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* published by the Australian and New Zealand Environment and Conservation Council and the Agriculture and Resource Management Council of Australia and New Zealand in 2000.

approval authority, in relation to the proposed trade of a water access right, means a person whose approval is required under State water management law for the trade to proceed.

asset class means a class of environmental asset.

Example: Floodplain, riparian forest or billabong.

basic right means any of the following:

- (a) a right under State water management law to take water for domestic or stock purposes;
- (b) a harvestable right under the *Water Management Act 2000* of New South Wales;
- (c) a native title right.

Basin annual environmental watering priorities has the meaning given by section 7.25.

BDL (baseline diversion limit) means the baseline limit of take from an SDL resource unit. This baseline limit is:

- (a) for a surface water SDL resource unit – the quantity of water calculated in accordance with column 2 of the table in Schedule 3 for that SDL resource unit; and
- (b) for a groundwater SDL resource unit – the quantity of water specified in column 3 of the table in Schedule 4 for that SDL resource unit.

carryover announcement means an announcement made by a Basin State as to when water allocations covered by a carryover arrangement may be taken or traded.

carryover arrangement means an arrangement which allows a water access right holder to retain water allocations not taken in a **water accounting period** for possible take or trade in the next water accounting period.

commercial plantation means an area of land on which perennial woody plants are planted primarily for commercial purposes (other than the production of food).

Note: Some examples of commercial purposes are the production of timber, woodchip, oil or biofuel, or the commercial exploitation of the carbon sequestration capacity of the plants.

conveyance reserve has the meaning given by clause 2 of the Agreement.

deep drainage means the volume of water that moves below the root zone, whether or not the water enters the saturated zone and becomes recharge to the groundwater system.

Department means the Commonwealth Department of Sustainability, Environment, Water, Population and Communities.

de-watering means controlling or lowering the level of groundwater within an aquifer.

EC means electrical conductivity.

ecological objective means an objective for the protection, and if necessary restoration, of a priority environmental asset or priority ecosystem function.

ecological target means a target that must be met in order to achieve an ecological objective.

environmental assets and ecosystem functions database has the meaning given by section 7.26.

environmental water recovery recommendations has the meaning given by section 7.53.

environmental watering requirements means the environmental watering requirements of a priority environmental asset or priority

ecosystem function, as the case may be, identified using the method set out in Part 5 of Chapter 7.

floodplain harvesting means the taking of water from a floodplain after it leaves a watercourse during a flood.

form of take means any of the following forms of take:

- (a) take from a watercourse;
- (b) take from a regulated river;
- (c) take by floodplain harvesting;
- (d) take by a runoff dam;
- (e) net take by a commercial plantation;
- (f) take from groundwater;
- (g) take under a basic right.

generally available has the meaning given by section 11.48.

groundwater resource means a Basin water resource consisting of:

- (a) groundwater; or
- (b) an aquifer (whether or not it has water in it).

groundwater SDL resource unit has the meaning given by section 6.03.

Guidelines for Managing Risks in Recreational Water means the Guidelines for Managing Risks in Recreational Water published by the National Health and Medical Research Council in 2008.

historical climate conditions means the climatic conditions for the period July 1895 to June 2009 represented by the best available records of hydrological and meteorological information for that period.

hydraulic connectivity means the ease with which, or the rate at which, groundwater moves:

- (a) within an aquifer; or
- (b) between aquifers; or
- (c) between aquifers and the adjacent or overlying surface water system.

hydrologic connections and water supply considerations has the meaning given by section 11.17.

Indigenous uses has the meaning given by section 9.56.

Indigenous values has the meaning given by section 9.56.

listed threatened ecological community has the meaning given by section 528 of the *Environment Protection and Biodiversity Conservation Act 1999*.

listed threatened species has the meaning given by section 528 of the *Environment Protection and Biodiversity Conservation Act 1999*.

local reduction amount, for an SDL resource unit, means:

- (a) the quantity of water identified in column 2 of Schedule 2 as the local reduction amount for the unit; or
- (b) if no quantity is identified – zero.

location-related right has the meaning given by section 11.06.

long-term watering plan has the meaning given by section 7.10.

major storages has the meaning given by clause 2 of the Agreement.

MDBA Technical Report 2010/20 means the Murray-Darling Basin Authority Technical Report 2010/20 titled *Water Resource Assessments for Without Development and Baseline Conditions* published by the Authority in November 2010.

MDBA Technical Report 2011/01 means the Murray-Darling Basin Authority Technical Report 2011/01 titled *Comparison of Watercourse Diversion Estimates in the Guide to the Proposed Basin Plan with other Published Estimates* published by the Authority in March 2011.

native title right has the meaning given by section 223 of the *Native Title Act 1993*.

natural monthly water temperature means the natural monthly water temperature that is estimated either through modelling or through the actual measurement of temperature at representative undisturbed locations.

net take, in the context of a commercial plantation, means the difference between the take by a commercial plantation and the take by the vegetation existing at the site of the plantation before the plantation commenced.

NTU means a nephelometric turbidity unit.

overturn means the remixing of a stratified water body.

physical constraint means a natural formation or a physical structure (for example, a pipe or channel) that limits the volume of water that can pass a given location.

priority ecosystem function has the meaning given by section 7.28.

priority environmental asset has the meaning given by section 7.27.

raw water means water in its natural state prior to any treatment.

recharge means the inflow of water, including precipitation, to a groundwater resource.

reconfiguration or decommissioning work has the meaning given by section 11.28.

recovery of environmental water means the acquisition of a water access right for the purpose of achieving an environmental outcome.

register of take has the meaning given by section 6.09.

regulated river means:

- (a) in New South Wales - a river that has been declared in accordance with the *Water Management Act 2000* of New South Wales to be a regulated river before the commencement of the Basin Plan;
- (b) in Victoria - a river where the flow is regulated through the operation of large dams or large weirs.

regulated system means a surface water system in which water in a watercourse can be stored or flow levels can be controlled, through the use of structures such as large dams or large weirs.

related party, in relation to an approval authority, means:

- (a) an entity in which the approval authority has a controlling interest; or
- (b) a natural person who is acting on behalf of the approval authority in return for a commission or fee.

resource availability scenario has the meaning given by section 7.39.

restriction, in relation to trade, includes barrier.

runoff dam means a dam or reservoir that collects surface water, but does not include a dam or reservoir that collects water flowing in a watercourse.

SDL means the long-term average sustainable diversion limit.

SDL resource unit means the water resources, or particular parts of the water resources, of a water resource plan area that is either a surface water SDL resource unit or groundwater SDL resource unit.

SDL resource unit shared reduction amount has the meaning given by section 6.05.

shortfall in conveyance water means the shortfall calculated in accordance with subsection 86D(2) of the Act.

soil degradation, for the purposes of the objective for irrigation water in section 8.06 and the targets for irrigation water in section 8.14, means reduced permeability and soil structure breakdown caused by the level of sodium in the irrigation water, assessed using the sodium adsorption ratio.

surface water resource means a Basin water resource consisting of:

- (a) surface water; or

- (b) a watercourse, lake or wetland (whether or not it has water in it).

surface water SDL resource unit has the meaning given by section 6.02.

tagged water access entitlement has the meaning given by section 11.22.

target application zone has the meaning given by section 8.12.

tier of water sharing arrangements means either Tier 1 water sharing arrangements, Tier 2 water sharing arrangements or Tier 3 water sharing arrangements, within the meaning of the Agreement.

trade includes transfer.

transformation means the transformation of the whole, or a part, of an irrigation right into a water access entitlement in accordance with transformation arrangements.

transformation arrangements means arrangements of the kind referred to in paragraph 97(1)(a) of the Act.

unregulated system means a surface water system that is not a regulated system.

volumetric limit has the meaning given by section 11.16.

water accounting period has the meaning given by section 3.08.

water announcement has the meaning given by section 11.47.

Water for Rivers means the Joint Government Enterprise Limited, a public company limited by guarantee with the registered business name 'Water for Rivers'.

water market intermediary means any of the following:

- (a) a person who trades tradeable water rights on behalf of another person in exchange for a commission or fee;
- (b) a person who investigates tradeable water right trading possibilities on behalf of a potential water market participant for a commission or fee;
- (c) a person who prepares documents necessary for the trade of a tradeable water right on behalf of a potential water market participant for a commission or fee;
- (d) a person who provides a trading platform or water exchange for tradeable water rights.

water quality includes salinity.

water quality characteristic means a characteristic of water quality for which Part 4 of Chapter 8 sets a target value.

water register means a record of water access rights in a Basin State.

water resource assessment means an assessment (including one for the purposes of a determination under clause 102(c) of the Agreement) of the amount of water that will be available:

- (a) for distribution to New South Wales, Victoria and South Australia during a particular period; and
- (b) for holding in reserve at the end of the period;

taking into account matters including:

- (c) the volume of water held in the major storages;
- (d) estimated water use during the period; and
- (e) assumed or forecast inflows during the period.

water supply authority means an infrastructure operator that treats and supplies water for human consumption.

water use approval means an authority to use water on specified land or in a specified watercourse.

Wimmera-Mallee Pipeline Project means the joint water infrastructure project with the name 'The Wimmera-Mallee Pipeline Project' undertaken by Grampians Wimmera Mallee Water Corporation and funded by the Commonwealth and Victoria.

works approval means an authority to construct and use water supply works (including pumps, bores and dams).

worst case planning water resource assessment means a water resource assessment taking into account the minimum inflow sequence to the River Murray System.

WQM Plan means a water quality management plan for a water resource plan area made in accordance with Part 7 of Chapter 9.

1.08 Basin Plan not to be inconsistent with Snowy Water Licence

A provision of the Basin Plan has no effect to the extent to which the provision is inconsistent with the provisions of the licence issued under section 22 of the *Snowy Hydro Corporations Act 1997* of New South Wales.

1.09 Construction of provisions imposing obligations on States

If:

- (a) the Basin Plan purports to impose an obligation on a Basin State to do a particular thing; and
- (b) the imposition of that obligation would contravene a constitutional doctrine restricting the obligations that the Commonwealth may impose on a State;

the Basin Plan is taken, instead of imposing the obligation, to confer a discretion on the Basin State to do the thing.

Chapter 2—Basin water resources and the context for their use

2.01 Description located in Schedule 1

The description of the Basin water resources and the context in which those resources are used (item 1 of the table in subsection 22(1) of the Act) is set out in Schedule 1.

Chapter 3—Water resource plan areas and water accounting periods

Part 1—Preliminary

3.01 Simplified outline

- (1) This section sets out a simplified outline of this Chapter.
- (2) Part 2 identifies the particular areas that are to be water resource plan areas (item 2 of the table in subsection 22(1) of the Act).

Note: A map of the water resource plan areas can be obtained from the Authority's website.

- (3) Part 3 identifies the periods that are to be the water accounting periods for each of those water resource plan areas (item 2 of the table in subsection 22(1) of the Act).

3.02 Time at which area becomes a water resource plan area

An area identified in Part 2 as a water resource plan area becomes a water resource plan area on the commencement of the Basin Plan.

3.03 Datasets for identification of water resource plan areas

- (1) A reference in section 3.05 to an area of a particular name is a reference to the area within the polygon of that name specified in the dataset that:
 - (a) is titled *Murray-Darling Basin Water Resource Plan Areas – Surface Water*; and
 - (b) has a dataset scale of 1:250,000; and
 - (c) is held by the Authority.
- (2) A reference in section 3.06 to an area of a particular name is a reference to the area within the polygon of that name specified in the dataset that:
 - (a) is titled *Murray-Darling Basin Water Resource Plan Areas – Groundwater*; and
 - (b) has a dataset scale of 1:250,000; and
 - (c) is held by the Authority.
- (3) A reference in section 3.07 to an area of a particular name is a reference to the area within the polygon of that name specified in both the datasets mentioned in subsections (1) and (2).

- (4) The Authority must publish on its website a map that:
 - (a) identifies each water resource plan area; and
 - (b) is prepared using the relevant dataset mentioned in this section.

3.04 Flexibility relating to boundaries of water resource plans

If a segment of the boundary of a water resource plan area, as specified in a dataset mentioned in section 3.03, is also the boundary of the Murray-Darling Basin, the water resource plan for the area may specify a different course for that segment within the Murray-Darling Basin, provided that the changed boundary:

- (a) meets the requirements of item 2 of the table in subsection 22(1) of the Act; and
- (b) does not result in a material change in the water resources to which the water resource plan area applies.

Part 2—Water resource plan areas

3.05 Water resource plan areas – surface water

Note: See section 1.07 for the meaning of *surface water resource*.

Each of the following named areas is a water resource plan area that applies to the surface water resources indicated:

- (a) **Australian Capital Territory (surface water)** — all surface water resources in the area;
- (b) **Barwon-Darling Watercourse** — all surface water resources in the area;
- (c) **New South Wales Border Rivers** — all surface water resources in the area;
- (d) **Northern Victoria** — all surface water resources in the area;
- (e) **Gwydir** — all surface water resources in the area;
- (f) **Intersecting Streams** — all surface water resources in the area;
- (g) **Lachlan** — all surface water resources in the area;
- (h) **Macquarie-Castlereagh** — all surface water resources in the area;
- (i) **Murrumbidgee** — all surface water resources in the area;
- (j) **New South Wales Murray and Lower Darling** — all surface water resources in the area;
- (k) **Namoi** — all surface water resources in the area;

- (l) **Victorian Murray** — all surface water resources in the area;
- (m) **Wimmera-Mallee (surface water)** — all surface water resources in the area.

3.06 Water resource plan areas – groundwater

Note: See section 1.07 for the meaning of **groundwater resource**.

Each of the following named areas is a water resource plan area that applies to the groundwater resources indicated:

- (a) **Australian Capital Territory (groundwater)** — all groundwater resources beneath the area;
- (b) **New South Wales Alluvium above GAB** — all groundwater resources beneath the area, excluding the Gunnedah-Oxley Basin;
- (c) **New South Wales Border Rivers Alluvium** — all groundwater resources beneath the area, excluding the Gunnedah-Oxley Basin;
- (d) **Darling Alluvium** — all groundwater resources beneath the area;
- (e) **Eastern Porous Rock** — the following:
 - (i) all groundwater resources beneath the area;
 - (ii) all Basin water resources in the Gunnedah-Oxley Basin whether or not those resources are beneath the area;
- (f) **Goulburn-Murray** — all groundwater resources beneath the area;
- (g) **Gwydir Alluvium** — all groundwater resources beneath the area, excluding the Gunnedah-Oxley Basin;
- (h) **Lachlan Alluvium** — all groundwater resources beneath the area;
- (i) **Lachlan and South Western Fractured Rock** — all groundwater resources beneath the area, excluding the Oaklands Basin;
- (j) **Macquarie-Castlereagh Alluvium** — all groundwater resources beneath the area, excluding the Gunnedah-Oxley Basin;
- (k) **Murray Alluvium** — the following:
 - (i) all groundwater resources beneath the area;
 - (ii) all Basin water resources in the Oaklands Basin, whether or not those resources are beneath the area;
- (l) **Murrumbidgee Alluvium** — all groundwater resources beneath the area, excluding the Oaklands Basin;

- (m) **Namoi Alluvium** — all groundwater resources beneath the area, excluding the Gunnedah-Oxley Basin;
- (n) **New England Fractured Rock and Northern Basalts** — all groundwater resources beneath the area, excluding the Gunnedah-Oxley Basin;
- (o) **New South Wales Sediments above GAB** — all groundwater resources beneath the area;
- (p) **Western Porous Rock** — all groundwater resources beneath the area;
- (q) **Wimmera-Mallee (groundwater)** — all groundwater resources beneath the area.

3.07 Water resource plan areas – surface water and groundwater

Each of the following named areas is a water resource plan area that applies to the surface water resources and groundwater resources indicated:

- (a) **Warrego-Paroo-Nebine** — the following:
 - (i) all surface water resources in the area;
 - (ii) all groundwater resources beneath the area that are above the Great Artesian Basin;
- (b) **Condamine-Balonne** — the following:
 - (i) all surface water resources in the area;
 - (ii) all groundwater resources beneath the area that are above the Great Artesian Basin;
- (c) **Moonie** — the following:
 - (i) all surface water resources in the area;
 - (ii) all groundwater resources beneath the area that are above the Great Artesian Basin;
- (d) **Queensland Border Rivers** — the following:
 - (i) all surface water resources in the area;
 - (ii) all groundwater resources beneath the area that are above the Great Artesian Basin;
- (e) **South Australian Murray** — the following:
 - (i) all surface water resources in the area;
 - (ii) all groundwater resources beneath the area;
- (f) **Eastern Mount Lofty Ranges** — the following:
 - (i) all surface water resources in the area;
 - (ii) all groundwater resources beneath the area.

Part 3—Water accounting periods

3.08 Water accounting period for each water resource plan area

The water accounting period for each water resource plan area is a financial year.

Note: In Chapter 10, *water accounting period* means a period of 12 months beginning on 1 June of any year (see section 10.02).

Chapter 4—The identification and management of risks to Basin water resources

Part 1—Preliminary

4.01 Simplified outline

- (1) This section sets out a simplified outline of this Chapter.
- (2) This Chapter identifies:
 - (a) risks to the condition, or continued availability, of Basin water resources (item 3 of the table in subsection 22(1) of the Act); and
 - (b) strategies to manage, or address, those risks (item 5 of the table in subsection 22(1) of the Act).

Part 2—Risks and strategies to address those risks

4.02 Risks to the condition, or continued availability, of Basin water resources, and consequential risks

- (1) The risks to the condition, or continued availability, of Basin water resources, including the risks to the availability of Basin water resources that arise from the matters specified in item 3 of the table in subsection 22(1) of the Act are:
 - (a) insufficient water available for the environment; and
 - (b) water being of a quality unsuitable for use; and
 - (c) poor health of water-dependent ecosystems.
- (2) The consequences of the materialisation of the risks identified in subsection (1) include:
 - (a) that insufficient water is available, or water is not suitable for consumptive and other economic uses of Basin water resources; and
 - (b) that insufficient water is available, or water is not suitable to maintain social, cultural, Indigenous and other public benefit values.

4.03 Strategies to manage, or address, identified risks

- (1) This section sets out the strategies to manage, or address, the risks identified in section 4.02.

Note: Water resource plans must be prepared having regard to the strategies (see subsection 9.47(3)).

- (2) The Authority must have regard to the strategies when undertaking its functions.

- (3) The strategies are the following:

- (a) to implement the Basin Plan, including its following key elements:
- (i) the environmental watering plan;
 - (ii) the water quality and salinity management plan;
 - (iii) the water trading rules;
 - (iv) water resource planning;
- (b) to develop water resource plans and amendments to the Basin Plan based on best available knowledge and in consultation with relevant stakeholders;
- (c) to promote a risk-based approach to water resource planning and management;
- (d) to manage flows to optimise outcomes across the range of water uses in the Murray-Darling Basin;
- (e) to ensure effective monitoring and evaluation of the implementation of the Basin Plan;
- (f) to promote and enforce compliance with the Basin Plan and water resource plans;
- (g) to improve knowledge of water requirements within the Murray-Darling Basin, including the following:
- (i) environmental watering requirements;
 - (ii) requirements relating to the social, spiritual and cultural uses of Basin water resources by Indigenous people;
 - (iii) the impact of climate change on water requirements;
 - (iv) the water required to deliver social and economic benefits to Basin communities;
- (h) to improve knowledge of the impact on Basin water resources of the following:
- (i) interception activities and land use change;
 - (ii) floodplain harvesting and peri-urban and industrial take;

- (iii) climate change;
- (i) to improve knowledge of:
 - (i) groundwater and surface water resources, including through improved measurement; and
 - (ii) the causes of water quality degradation and the effects of water quality on environmental assets and ecosystem functions.

4.04 Authority may publish guidelines

- (1) The Authority may publish guidelines setting out specific actions that may be taken in relation to the implementation of the strategies listed in subsection 4.03(3).
- (2) The guidelines may be reviewed and, if necessary, updated at any time.
- (3) The guidelines must be made having regard to AS/NZS ISO 31000:2009 *Risk Management – Principles and Guidelines*.

Note: Water resource plans must be prepared having regard to any guidelines published in accordance with this section (see subsection 9.47(3)).

Chapter 5—Management objectives and outcomes to be achieved by the Basin Plan

5.01 Simplified outline

- (1) This section sets out a simplified outline of this Chapter.
- (2) This Chapter sets out the management objectives and outcomes to be achieved by the Basin Plan (item 4 of the table in subsection 22(1) of the Act).
- (3) The management objectives and outcomes include objectives and outcomes:
 - (a) for the Basin Plan as a whole; and
 - (b) in relation to environmental outcomes; and
 - (c) in relation to water quality and salinity; and
 - (d) in relation to the long-term average sustainable diversion limits; and
 - (e) in relation to the trading of tradeable water rights.

Note: The temporary diversion provision for each SDL resource unit is zero. Accordingly, there are no objectives or outcomes in relation to the temporary diversion provision.

5.02 Management objective and outcomes for the Basin Plan as a whole

- (1) The management objective for the Basin Plan as a whole is to achieve a healthy working Murray-Darling Basin, including a healthy environment, strong communities and a productive economy, through the integrated and cost effective management of Basin water resources.
- (2) The management outcomes that correspond to the objective in subsection (1) are that Basin water resources are used in a way that:
 - (a) optimises economic, social and environmental outcomes; and
 - (b) gives effect to relevant international agreements; and
 - (c) improves water security for all uses of Basin water resources.

5.03 Management objectives and outcome in relation to environmental outcomes

- (1) The management objectives in relation to environmental outcomes are, within the context of a working Murray-Darling Basin:

- (a) to protect and restore water-dependent ecosystems of the Murray-Darling Basin; and
- (b) to protect and restore the ecosystem functions of water-dependent ecosystems; and
- (c) to ensure that water-dependent ecosystems are resilient to risks and threats; and
- (d) to ensure that environmental watering is co-ordinated between managers of planned environmental water, owners and managers of environmental assets, and holders of held environmental water.

Note 1: The fact that water storages and property (including floodplains) are under the control of various persons will restrict the capacity to actively manage all water-dependent ecosystems.

Note 2: Subsidiary objectives to each of the objectives in paragraphs (1)(a) to (c) are specified in Part 2 of Chapter 7.

- (2) The management outcome that corresponds to the objectives in subsection (1) is that the ecological and other values of water-dependent ecosystems in the Murray-Darling Basin are protected and restored so that ecosystems remain healthy in a changing climate.

5.04 Management objective and outcome in relation to water quality and salinity

- (1) The management objective in relation to water quality is to maintain appropriate water quality, including salinity levels, for environmental, social, cultural and economic activity in the Murray-Darling Basin.

Note: See also the water quality objectives for Basin water resources in Part 3 of Chapter 8.

- (2) The management outcome that corresponds to the objective in subsection (1) is that there is a low risk that Basin water resources will be unfit for use.

5.05 Management objective and outcomes in relation to long-term average sustainable diversion limits

- (1) The management objective in relation to long-term average sustainable diversion limits is to establish environmentally sustainable limits on the quantities of surface water and groundwater that can be taken for consumptive use from Basin water resources and in doing so:
 - (a) inform environmental water recovery measures, including water purchasing and infrastructure that improves water use efficiency; and
 - (b) provide greater certainty for all water users, including in times of drought and low water availability; and

- (c) provide time for water access entitlement holders and communities to transition and adjust to long-term average sustainable diversion limits.
- (2) The management outcomes that correspond to the objective in subsection (1) are:
 - (a) the outcome in subsection 5.03(2); and
 - (b) well informed water recovery measures, including water purchasing and infrastructure, enable a transition to long-term average sustainable diversion limits; and
 - (c) greater certainty of access to Basin water resources; and
 - (d) water access entitlement holders and communities of the Murray-Darling Basin are better adapted to reduced quantities of available water.

5.06 Management objectives and outcome in relation to the trading of tradeable water rights

- (1) The management objectives for trading of tradeable water rights are:
 - (a) to facilitate the operation of efficient water markets and the opportunities for trading, within and between Basin States, where water resources are physically shared or hydrologic connections and water supply considerations will permit water trading; and
 - (b) to minimise transaction cost on water trades, including through good information flows in the market and compatible entitlement, registry, regulatory and other arrangements across jurisdictions; and
 - (c) to enable the appropriate mix of water products to develop based on water access entitlements which can be traded either in whole or in part, and either temporarily or permanently, or through lease arrangements or other trading options that may evolve over time; and
 - (d) to recognise and protect the needs of the environment; and
 - (e) to provide appropriate protection of third-party interests.
- (2) The management outcome that corresponds to the objectives in subsection (1) is that efficient and effective water markets facilitate tradeable water access rights reaching their most productive use.

Chapter 6—Water that can be taken

Part 1—Preliminary

6.01 Simplified outline

- (1) This section sets out a simplified outline of this Chapter.
- (2) This Chapter deals with the matters set out in items 6, 7 and 8 of the table in subsection 22(1) and Division 4 of Part 2 of the Act. Those matters are:
 - (a) the long-term average sustainable diversion limits (Part 2); and
 - (b) the temporary diversion provision (Part 3); and
 - (c) the method for determining compliance with the long-term annual diversion limit (Part 4); and
 - (d) allocation of risks in relation to reductions in diversion limits (Part 5); and
 - (e) risks arising from other changes to the Basin Plan (Part 5).

Part 2—Long-term average sustainable diversion limits

Division 1—Identification of SDL resource units

6.02 Identification of surface water SDL resource units

- (1) A **surface water SDL resource unit** referred to in column 1 of the table in Schedule 2 consists of all surface water resources within the area described by the polygon of the same name contained in the dataset that:
 - (a) is titled *Surface Water SDL Resource Units*; and
 - (b) has a dataset scale of 1:250,000; and
 - (c) is held by the Authority.

Note: See subsection 6.04(2) for the long-term average sustainable diversion limits that apply to each surface water SDL resource unit.

- (2) The Authority must publish on its website a map that:
 - (a) identifies each surface water SDL resource unit; and
 - (b) is prepared using the dataset referred to in subsection (1).

6.03 Identification of groundwater SDL resource units

- (1) A **groundwater SDL resource unit** referred to in column 1 of the table in Schedule 4 consists of all groundwater resources described by column 2 of Schedule 4 that lie beneath the area described by the polygon of the same name in the dataset that:

- (a) is titled *Groundwater SDL Resource Units*; and
- (b) has a dataset scale of 1:250,000; and
- (c) is held by the Authority.

Note: See subsection 6.04(3) for the long-term average sustainable diversion limits that apply to each groundwater SDL resource unit.

- (2) The Authority must publish on its website a map that:

- (a) identifies each groundwater SDL resource unit; and
- (b) is prepared using the dataset referred to in subsection (1).

Division 2—Long-term average sustainable diversion limits

Note: Water resource plans are not required to give effect to the long-term average sustainable diversion limits until 1 July 2019 (see Part 3 of Chapter 9).

6.04 Long-term average sustainable diversion limits

- (1) The long-term average sustainable diversion limit for the Basin water resources as a whole is the sum of the long-term average sustainable diversion limits for the water resources of all SDL resource units.

Note: The Authority estimates the long-term average sustainable diversion limit for all surface water SDL resource units to be 10,873 GL per year. This reflects a reduction of 2,750 GL per year from the Authority's estimate of the BDL for all surface water SDL resource units. The Authority estimates that, as of 30 September 2011, 1,068 GL per year has been recovered for the environment. An additional 214 GL per year from the Northern Victoria Irrigation Renewal Project Stage 2 has recently been announced as recovered, leaving a further 1,468 GL per year to be recovered.

- (2) The long-term average sustainable diversion limit for the water resources that make up each surface water SDL resource unit is set out in column 2 of the table in Schedule 2.

- (3) The long-term average sustainable diversion limit for the water resources that make up each groundwater SDL resource unit is set out in column 4 of the table in Schedule 4.

Note: This section sets environmentally sustainable limits on the quantity of surface water and groundwater that may be taken from an SDL resource unit. However, a water resource plan may set a lower long-term annual average limit on the quantity of water that can be taken. See also section 9.13.

6.05 SDL resource unit shared reduction amount

- (1) For the purposes of column 2 of Schedule 2, the ***SDL resource unit shared reduction amount*** for an SDL resource unit in one of the zones mentioned in subsection (2) is the quantity of relevant environmental water for the SDL resource unit on the day when the reduction target for the zone is met in accordance with subsection (3).
- (2) For the purposes of this section, there are two zones:
 - (a) the ***northern Basin zone***, made up of the following SDL resource units:
 - (i) Barwon-Darling Watercourse (SS19);
 - (ii) Condamine-Balonne (SS26);
 - (iii) Intersecting Streams (SS17);
 - (iv) Macquarie-Castlereagh (SS20);
 - (v) Moonie (SS25);
 - (vi) Namoi (SS21);
 - (vii) NSW Border Rivers (SS23);
 - (viii) Queensland Border Rivers (SS24); and
 - (b) the ***southern Basin zone***, made up of the following SDL resource units:
 - (i) Broken (SS5);
 - (ii) Campaspe (SS7);
 - (iii) Eastern Mount Lofty Ranges (SS13).
 - (iv) Goulburn (SS6);
 - (v) Kiewa (SS3);
 - (vi) Loddon (SS8);
 - (vii) Lower Darling (SS18);
 - (viii) Murrumbidgee (SS15);
 - (ix) New South Wales Murray (SS14);
 - (x) Ovens (SS4);
 - (xi) South Australian Murray (SS11);
 - (xii) Victorian Murray (SS2).
- (3) For the purposes of this section:
 - (a) the reduction target for the northern Basin zone is met on the day on which the total quantity of relevant environmental water

for all the SDL resource units in the zone equals 143 GL per year;

- (b) the reduction target for the southern Basin zone is met on the day on which the total quantity of relevant environmental water for all the SDL resource units in the zone equals 971 GL per year.
- (4) In this section:

quantity of relevant environmental water, for an SDL resource unit, means the amount, if any, by which the quantity of SDL resource unit environmental water for the resource unit exceeds the local reduction amount for the unit.

Note: See section 1.07 for the meaning of **local reduction amount**.

quantity of SDL resource unit environmental water, for an SDL resource unit means the quantity of water, in GL per year, that:

- (a) is sourced from the unit; and
 - (b) is held environmental water, or water available under a water access right that has been converted into planned environmental water; and
 - (c) for the southern Basin zone—is not held environmental water that is expressly excluded from the BDL for the unit under Schedule 3.
- (5) When the Authority is satisfied that the reduction target for a zone has been met, it must publish on its website a notice of:
- (a) the day on which the target for the zone was met; and
 - (b) the quantity of relevant environmental water in each SDL resource unit in the zone on that day.

Note: The Authority will use long-term diversion limit equivalent factors to convert water access entitlements into a common unit for the purpose of calculating when this day will occur.

6.06 Authority may express its view in relation to possible adjustments to SDLs

- (1) The Authority may express its view in relation to the extent to which changes arising from any of the following matters are likely to result in a need to adjust the long-term average sustainable diversion limit for an SDL resource unit:
- (a) works or measures;
 - (b) river management and river operational practices;
 - (c) methods of delivering water;
 - (d) new knowledge;

- (e) proposals which serve to advance the objectives and outcomes of the Basin Plan, including optimising economic, social and environmental outcomes;
- (f) any other matter.
- (2) If the Authority expresses its view, it must record the matter, the view and the reasons for it on a register.
- (3) The Authority must publish the register on its website.

6.07 Review of SDLs in 2015

- (1) The Authority must undertake a review of the long-term average sustainable diversion limits in 2015 and prepare a written report of the review.
- (2) The purpose of the review is to inform the Authority to determine whether it should propose:
 - (a) any changes to the long-term average sustainable diversion limits; and
 - (b) apportionment of the reduction target amounts referred to in subsection 6.05(3) between Basin States or SDL resource units;to be made (by amendment to the Basin Plan) before 30 June 2017.
- (3) The review must:
 - (a) take into account all relevant information available to the Authority, including the register maintained in accordance with section 6.06; and
 - (b) be undertaken in consultation with Basin States and the community.

Note: The Authority may prepare an amendment of the Basin Plan under section 45 of the Act.
- (4) The Authority must publish the report on its website.

Part 3—Temporary diversion provision

6.08 Temporary diversion provision

The temporary diversion provision for each SDL resource unit is zero.

Part 4—Method for determining compliance with the long-term annual diversion limit

Division 1—Register of take

6.09 Register of take

- (1) The Authority must establish and maintain a **register of take** for each SDL resource unit in accordance with this Part.
- (2) The purpose of the register of take is to assist with determining, for each water accounting period, whether there has been compliance with the long-term annual diversion limit for an SDL resource unit and the extent of any failure to comply with that limit.

Note: See section 4 of the Act for the meaning of **long-term annual diversion limit**. Under the Basin Plan, the long-term annual diversion limit is the same as the long-term average sustainable diversion limit because the temporary diversion provision for each SDL resource unit is zero.

- (3) For each SDL resource unit, the register of take must include:
 - (a) a debit column to record the amounts referred to in subsections 6.12(1) and (3); and
 - (b) a credit column to record the amounts referred to in subsections 6.12(2) and (3); and
 - (c) a cumulative balance column to record the amounts referred to in subsection 6.12(4).
- (4) The register may also include any other matters the Authority considers relevant to determining whether there has been compliance with the long-term annual diversion limit.
- (5) The register of take commences in the first water accounting period after 30 June 2019 following the commencement of a water resource plan.
- (6) When a register of take commences, the register of take for an SDL resource unit must record a cumulative balance of zero.
- (7) The Authority must publish the register of take on its website.

Division 2—Method for determining compliance

6.10 Method for determining compliance with a long-term annual diversion limit

- (1) The method for determining compliance with the long-term annual diversion limit for an SDL resource unit in a water accounting period is to follow the steps set out in this Division.

- (2) The method applies to each water accounting period after 30 June 2019 following the commencement of a water resource plan relating to the SDL resource unit.

6.11 Step 1: Calculation of annual permitted take and annual actual take

- (1) For a water accounting period, sum the quantity of water permitted to be taken by each form of take for consumptive use from the SDL resource unit (**annual permitted take**).

Note: Section 9.14 requires a water resource plan to determine the quantity of water permitted to be taken by each form of take for consumptive use from the SDL resource unit in each water accounting period.

- (2) For the same water accounting period, sum the quantity of water actually taken by each form of take for consumptive use from the SDL resource unit (**annual actual take**).

Note: See section 9.20.

6.12 Step 2: Record the difference between annual actual take and annual permitted take

- (1) If the annual actual take is greater than the annual permitted take, the difference must be recorded on the register of take for the SDL resource unit as a debit.
- (2) If the annual actual take is less than the annual permitted take, the difference must be recorded on the register of take as a credit.
- (3) If there is no difference between the annual actual take and the annual permitted take, a zero must be recorded on the register of take in both the debit column and the credit column.
- (4) As a result of the record made under subsections (1) to (3):
 - (a) determine the new cumulative balance of the difference between annual permitted take and annual actual take for the SDL resource unit; and
 - (b) record this balance on the register of take as either a cumulative debit, cumulative credit, or a zero.

6.13 Step 3: Determine whether there is non-compliance

Note: See paragraphs 71(1)(g) and (h) of the Act.

- (1) There is non-compliance with a long-term annual diversion limit for an SDL resource unit in a water accounting period if:
 - (a) the cumulative balance for an SDL resource unit, adjusted to account for any disposal or acquisition of held environmental water, is a debit amount equal to or greater than 20% of the long-term annual diversion limit for the SDL resource unit; and

- (b) the Basin State does not have a reasonable excuse for the excess.
- (2) For the purposes of subsection (1):
 - (a) the Victorian Murray, Kiewa and Ovens SDL resource units may be treated as a single SDL resource unit; and
 - (b) the Goulburn, Broken, Campaspe and Loddon SDL resource units may be treated as a single SDL resource unit.
- (3) A Basin State may not claim that there is a reasonable excuse for an excess unless it has provided a report to the Authority setting out:
 - (a) the reasons for the excess; and
 - (b) the steps the Basin State will take to bring the balance of the register of take back below 20% of the long-term annual diversion limit for the SDL resource unit.

Note: The Authority may undertake an audit in relation to compliance using its powers under the Act. The Authority may publish the findings of its audit, including steps that it believes should be taken to bring the SDL resource unit below the 20% threshold. The findings of such an audit may also lead to further action being taken by the Authority to ensure compliance with sections 34, 35, 58 and 59 of the Act.

Part 5—Allocation of risks in relation to reductions in water availability

6.14 Risks arising from reduction in diversion limits

- (1) This section sets out the matters required by Subdivision A of Division 4 of Part 2 of the Act.
- (2) For the purposes of subsection 78(2) of the Act, the long-term average limit on the quantity of water that can be taken from an SDL resource unit that the Authority is satisfied will be applicable immediately before a transitional water resource plan, or interim water resource plan, ceases to have effect is the BDL for the SDL resource unit.

Note: See section 1.07 for the meaning of **BDL**.

- (3) For the purposes of paragraph 75(1)(a) of the Act, the amount of the reduction is the amount by which the BDL for the SDL resource unit exceeds the long-term annual diversion limit for the SDL resource unit.
- (4) For the purposes of paragraph 75(1)(b) of the Act, the Commonwealth Government policy component of the reduction is 100% of the reduction.

- (5) For the purposes of paragraph 75(1)(c) of the Act, the new knowledge component of the reduction is zero.
- (6) For the purposes of paragraph 75(1)(d) of the Act, the Commonwealth's share of the reduction is 100% of the reduction.

Note: See subsections 77(2) and (5) of the Act.

6.15 Risks arising from other changes to the Basin Plan

Nothing in the Basin Plan requires a change in the reliability of water allocations of a kind that would trigger Subdivision B of Division 4 of Part 2 of the Act.

Note: See also section 9.09.

Chapter 7—Environmental watering plan

Part 1—Preliminary

7.01 Simplified outline

- (1) This section sets out a simplified outline of this Chapter.
- (2) This Chapter sets out the environmental watering plan (item 9 of the table in subsection 22(1) and section 28 of the Act).
- (3) The environmental watering plan sets out the following:
 - (a) overall environmental objectives for the water-dependent ecosystems of the Murray-Darling Basin (Part 2);
 - (b) targets by which to measure progress towards achieving those objectives (Part 3);
 - (c) an environmental management framework for planned environmental water and held environmental water (Part 4) which includes:
 - (i) processes to co-ordinate the planning and management of that water; and
 - (ii) the Authority's role in planning for the recovery of additional environmental water;

Note: Existing environmental water is safeguarded by other parts of the Basin Plan. See Chapter 6 (which deals with long-term annual diversion limits) and Chapter 9 (which deals with requirements that a water resource plan must comply with to be accredited or adopted).

- (d) methods to be used to identify environmental assets and ecosystem functions in the Murray-Darling Basin that require environmental watering (Part 5);
- (e) principles to be applied, and methods to be used, to determine the priorities for applying environmental water (Part 6);
- (f) principles to be applied in environmental watering, including a requirement that environmental watering must be carried out having regard to Basin annual environmental watering priorities published by the Authority (Part 7);
- (g) the Authority's role in planning for the recovery of additional environmental water (Part 8).

Part 2—Overall environmental objectives for the water-dependent ecosystems

7.02 Outline of this Part

- (1) This Part sets out:
 - (a) overall environmental objectives; and
 - (b) subsidiary objectives for each of those objectives.
- (2) These objectives will be met in part by the provision of environmental water but will also be supported by other management actions.

Note: See also subsections 22(9) to (12) of the Act.

7.03 Overall environmental objectives

The overall environmental objectives for the water-dependent ecosystems of the Murray-Darling Basin are, within the context of a working Murray-Darling Basin:

- (a) to protect and restore water-dependent ecosystems of the Murray-Darling Basin; and
- (b) to protect and restore the ecosystem functions of water-dependent ecosystems; and
- (c) to ensure that water-dependent ecosystems are resilient to risks and threats.

Note 1: The fact that water storages and properties (including floodplains) are under the control of various persons will restrict the capacity to actively manage all water-dependent ecosystems.

Note 2: Long-term watering plans are required to identify ecological objectives and ecological targets for a water resource plan area in accordance with the method in Part 5.

7.04 Protection and restoration of water-dependent ecosystems

- (1) This section sets out subsidiary objectives relating to the protection and restoration of the water-dependent ecosystems of the Murray-Darling Basin.
- (2) An objective is to protect and restore a subset of all water-dependent ecosystems of the Murray-Darling Basin, including by ensuring that:
 - (a) declared Ramsar wetlands that depend on Basin water resources maintain their ecological character; and

Note: See paragraph 21(3)(c) of the Act.

 - (b) water-dependent ecosystems that depend on Basin water resources and support the lifecycles of species listed under the Bonn Convention, CAMBA, JAMBA or ROKAMBA continue to support those species; and

- (c) water-dependent ecosystems are able to support episodically high ecological productivity and its ecological dispersal.
- (3) An objective is to protect and restore biodiversity that is dependent on Basin water resources, including by ensuring that:
 - (a) water-dependent ecosystems that:
 - (i) depend on Basin water resources; and
 - (ii) support the lifecycles of a listed threatened species or listed threatened ecological community, or species treated as threatened or endangered (however described) in State or Territory law;
 - are protected and, if necessary, restored so that they continue to support those life cycles; and
 - (b) representative populations and communities of native biota are protected and, if necessary, restored.

7.05 Protection and restoration of ecosystem functions of water-dependent ecosystems

- (1) This section sets out subsidiary objectives relating to the protection and restoration of the ecosystem functions of water-dependent ecosystems.
- (2) An objective is that the water quality of Basin water resources does not adversely affect water-dependent ecosystems and is consistent with the water quality and salinity management plan.
- (3) An objective is to protect and restore connectivity within and between water-dependent ecosystems, including by ensuring that:
 - (a) the diversity and dynamics of geomorphic structures, habitats, species and genes are protected and restored; and
 - (b) ecological processes dependent on hydrologic connectivity longitudinally along rivers, and laterally, between rivers and their floodplains (and associated wetlands) are protected and restored; and
 - (c) the Murray Mouth remains open at frequencies, for durations, and with passing flows, sufficient to enable the conveyance of salt, nutrients and sediment from the Murray-Darling Basin to the ocean; and
 - (d) the Murray Mouth remains open at frequencies, and for durations, sufficient to ensure that the tidal exchanges maintain the Coorong's water quality (in particular salinity levels) within the tolerance of the Coorong ecosystem's resilience; and

Note: This is to ensure that water quality is maintained at a level that does not compromise the ecosystem and that hydrologic connectivity is restored and maintained.

- (e) barriers to the passage of biological resources (including biota, carbon and nutrients) through the Murray-Darling Basin are overcome or minimised.
- (4) An objective is that natural processes that shape landforms (for example, the formation and maintenance of soils) are protected and restored.
- (5) An objective is to provide habitat diversity for biota at a range of scales (including, for example, the Murray-Darling Basin, riverine landscape, river reach and asset class).
- (6) An objective is to protect and restore food webs that sustain water-dependent ecosystems, including by ensuring that energy, carbon and nutrient dynamics (including primary production and respiration) are protected and restored.
- (7) An objective is to protect and restore ecosystem functions of water-dependent ecosystems that maintain populations (for example recruitment, regeneration, dispersal, immigration and emigration) including by ensuring that:
 - (a) flow sequences, and inundation and recession events, meet ecological requirements (for example, cues for migration, germination and breeding); and
 - (b) habitat diversity that supports the life cycles of biota of water-dependent ecosystems (for example, habitats that protect juveniles from predation) is maintained.
- (8) An objective is to protect and restore ecological community structure and species interactions.

7.06 Ensuring water-dependent ecosystems are resilient to risks and threats

- (1) This section sets out subsidiary objectives relating to ensuring that water-dependent ecosystems are resilient to risks and threats.
- (2) An objective is that water-dependent ecosystems are resilient to climate change, climate variability and disturbances (for example, drought and fire).
- (3) An objective is to protect refugia in order to support the long-term survival and resilience of water-dependent populations of native flora and fauna, including during drought to allow for subsequent re-colonisation beyond the refugia.
- (4) An objective is to provide wetting and drying cycles and inundation intervals that do not exceed the tolerance of ecosystem resilience or the threshold of irreversible changes.

- (5) An objective is to mitigate human-induced threats (for example, the impact of alien species, water management activities and degraded water quality).
- (6) An objective is to minimise habitat fragmentation.

Part 3—Targets by which to measure progress towards objectives

7.07 Targets by which to measure progress towards achieving objectives

- (1) The targets by which to measure progress towards achieving the objectives in Part 2 are set out in Schedule 7.
- (2) As the targets will be used to measure progress towards achieving the objectives in Part 2:
 - (a) the achievement of the objectives in Part 2 should be given priority over the achievement of the targets; and
 - (b) if a target is not achieved, this does not in itself mean that a person has acted inconsistently with the environmental watering plan.

Note: Section 12.12 requires 5 yearly reviews of the environmental watering plan to be undertaken by the Authority, which will include a review of the targets.

7.08 Assessment of progress towards objectives in Part 2

The Authority must measure progress towards achieving the objectives in Part 2 by using the targets in Schedule 7 having regard to the following:

- (a) progress towards achieving the long-term average sustainable diversion limits;
- (b) ecological objectives and ecological targets set out in long-term watering plans;
- (c) climatic conditions;
- (d) Basin annual environmental watering priorities;
- (e) any information collected, or analysis undertaken, under Chapter 12;
- (f) the outcomes of any review of the environmental watering plan.

Note: Section 12.12 requires the Authority to undertake 5 yearly reviews of the environmental watering plan.

Part 4—Environmental management framework

Division 1—Environmental management framework

7.09 The environmental management framework

- (1) The environmental management framework is intended to co-ordinate the planning and use of environmental water on a long-term and annual basis and includes the following elements:
 - (a) long-term watering plans for each water resource plan area (Division 2);
 - (b) annual environmental watering priorities for each water resource plan area (Division 3);
 - (c) Basin annual environmental watering priorities (Division 4);
 - (d) the principles to be applied in environmental watering (Part 7);
 - (e) environmental water recovery recommendations (Part 8).
- (2) Long-term watering plans, annual environmental watering priorities and Basin annual environmental watering priorities must be prepared by applying:
 - (a) the methods for identifying environmental assets and ecosystem functions in the Murray-Darling Basin (Part 5); and
 - (b) the principles and method to determine the priorities for applying environmental water (Part 6).

Note: The effect of section 245 of the Act is that arrangements in a transitional water resource plan or interim water resource plan prevail over the requirements relating to the content required by an element of the framework to the extent that there is any inconsistency between the content required and the transitional water resource plan or interim water resource plan.

Division 2—Preparation of long-term watering plans

7.10 Preparation of long-term watering plans

- (1) A Basin State must prepare a long-term environmental watering plan for each water resource plan area that contains surface water (***long-term watering plan***).
- (2) A long-term watering plan must not be inconsistent with relevant international agreements.

Note: A purpose of the Basin Plan, including Chapter 7, is to give effect to relevant international agreements (see ss 20(a) and 21(1), (2) and (3) of the Act). This provision is a further check to ensure that this purpose is achieved.

- (3) A Basin State must give a long-term watering plan for a water resource plan area to the Authority:
 - (a) no later than 24 months after the commencement of the Basin Plan; or
 - (b) within another timeframe agreed to by the Authority and a Basin State.
- (4) The long-term watering plan may provide that a specified instrument or text, or specified part of an instrument or text, is part of the plan.

7.11 Long-term watering plans to be updated

- (1) A Basin State must review a long-term watering plan and give an updated plan to the Authority within 3 months after the following events:
 - (a) the water resource plan for the water resource plan area is accredited by the Minister under section 63 of the Act;
 - (b) an amendment of the water resource plan for the water resource plan area is accredited by the Minister under section 65 of the Act;
 - (c) the water resource plan for the water resource plan area is adopted by the Minister under section 69 of the Act;
 - (d) it is 5 years after the last time the plan was reviewed under this section.
- (2) A long-term watering plan may be reviewed and updated at any time.
- (3) If a Basin State updates a long-term watering plan under subsection (2), it must give a copy to the Authority within 3 months after the update.
- (4) In this section, an update includes a reissue without changes where a review has concluded that no change is required.

7.12 Consultation requirements

A long-term watering plan must be prepared in consultation with:

- (a) holders of held environmental water;
- (b) managers of planned environmental water;
- (c) local communities (including any local bodies established for the purpose of expressing the views of local communities in relation to environmental watering); and
- (d) persons materially affected by the management of environmental water in the water resource plan area.

7.13 Identification of environmental watering requirements

- (1) A long-term watering plan must identify:
 - (a) priority environmental assets in the water resource plan area; and
 - (b) ecological objectives and ecological targets for those assets; and
 - (c) environmental watering requirements needed to meet those targets in order to achieve those objectives; using the method in section 7.27.
- (2) A long-term watering plan must identify:
 - (a) priority ecosystem functions in the water resource plan area; and
 - (b) ecological objectives and ecological targets for those functions; and
 - (c) environmental watering requirements needed to meet those targets in order to achieve those objectives; using the method in section 7.28.

7.14 Identification of possible co-operative arrangements

A long-term watering plan must identify possible co-operative arrangements (for example, possible co-operative watering regimes) between holders of held environmental water, managers of planned environmental water, and owners or managers of environmental assets for the delivery of environmental water:

- (a) within the water resource plan area; and
- (b) between that area and upstream and downstream water resource plan areas;

that will ensure that environmental water meets the environmental watering requirements identified in accordance with section 7.13.

7.15 Identification of long-term risks

A long-term watering plan must identify:

- (a) long-term risks to providing for the environmental watering requirements of priority environmental assets and priority ecosystem functions; and
- (b) the strategies to manage those risks having regard to the strategies in Chapter 4.

7.16 Operational constraints

A long-term watering plan must identify any operational constraints in relation to environmental watering in the water resource plan area.

7.17 Supporting information

The long-term watering plan must include references to the information that informed the preparation of the long-term watering plan.

7.18 Advice from the Authority

The Authority may advise, or assist, a Basin State in preparing a long-term watering plan, or updated long-term watering plan.

7.19 Long-term watering plans may be published

The Authority or Basin State may publish a long-term watering plan or part of that plan.

Note: To ensure transparency, it is expected that Basin States will publish long-term watering plans as soon as is practical.

Division 3—Annual environmental watering priorities for a water resource plan area

7.20 Annual environmental watering priorities for a water resource plan area

- (1) A Basin State must, in relation to each water accounting period, identify annual environmental watering priorities for surface water in each water resource plan area (***annual environmental watering priorities***).

Note: This does not require an annual instrument. For example, the annual environmental watering priorities for several years may be included in one instrument.

- (2) Annual environmental watering priorities for a water accounting period must be given to the Authority:
 - (a) by 31 May before the commencement of that water accounting period; or
 - (b) within a timeframe agreed to by the Authority and a Basin State.
- (3) The annual environmental watering priorities may provide that a specified instrument or text, or specified part of an instrument or text, is part of the priorities.

7.21 Consistency with long-term watering plans

Annual environmental watering priorities for the water resource plan area must be consistent with the long-term watering plan for that water resource plan area.

7.22 Identification of priorities

- (1) Annual environmental watering priorities must, by using the principles and method set out in Part 6, identify priorities for the watering of

priority environmental assets and priority ecosystem functions in the water resource plan area.

- (2) Annual environmental watering priorities must identify, to the extent possible, the assumptions upon which the priorities were based, including:
 - (a) expected holdings of held environmental water, including quantities, reliability, security class, licence type, limitations, and other characteristics of that water (including who holds that water); and
 - (b) expected quantities of planned environmental water and the associated rules and arrangements relating to that water (including who manages that water).
- (3) Annual environmental watering priorities must be prepared having regard to any:
 - (a) register of held environmental water maintained under the rules of the water resource plan for the water resource plan area; and
 - (b) register of held environmental water maintained by the Director of Meteorology; and
 - (c) rules relating to planned environmental water in the transitional water resource plan, interim water resource plan or water resource plan for the water resource plan area, as applicable.

Note: See section 9.11 which requires water resource plans to identify planned environmental water and to maintain a register of held environmental water in certain circumstances.
- (4) To avoid doubt, the requirements in paragraphs (3)(a) and (b) apply only if a water resource plan has been accredited or adopted for the water resource plan area.

7.23 Identification of possible co-operative arrangements

Annual environmental watering priorities must identify possible co-operative arrangements (including possible co-operative watering regimes) between:

- (a) holders of held environmental water; and
- (b) managers of planned environmental water; and
- (c) owners or managers of environmental assets;

for the delivery of environmental water:

- (d) within the water resource plan area; and
- (e) between that area and upstream and downstream water resource plan areas;

that will ensure that environmental water meets the priorities identified in section 7.22.

7.24 Information to be provided to Basin States to prepare annual environmental watering priorities

- (1) To enable a Basin State to prepare annual environmental watering priorities, a holder of held environmental water in the water resource plan area:
 - (a) must give a Basin State information relating to the matters covered by paragraph 7.22(2)(a); and
 - (b) may give a Basin State views on environmental watering priorities for priority environmental assets and priority ecosystem functions for the water accounting period.
- (2) To enable a Basin State to prepare annual environmental watering priorities, a manager of planned environmental water in the water resource plan area:
 - (a) must give the Basin State information relating to the matters covered by paragraph 7.22(2)(b); and
 - (b) if planned environmental water may be used in another water resource plan area – must give the Basin State details of the water that will be made available and the manager’s preferred priorities for that water both inside and outside of the water resource plan area.

Division 4—Basin annual environmental watering priorities

7.25 Authority must prepare Basin annual environmental watering priorities

- (1) The Authority must, for each water accounting period, prepare annual watering priorities for the Murray-Darling Basin (***Basin annual environmental watering priorities***).
- (2) The Authority must prepare Basin annual environmental watering priorities that are consistent with the objectives in Part 2 of this Chapter.
- (3) When preparing the Basin annual environmental watering priorities, the Authority must have regard to the following:
 - (a) any advice prepared by a committee established under section 203 of the Act for the purpose of advising the Authority on issues relating to environmental watering;
 - (b) the long-term watering plans for all water resource plan areas;
 - (c) annual environmental watering priorities for all water resource plan areas;
 - (d) the method in Part 5 and the principles and method in Part 6;

- (e) the water quality and salinity objectives and targets specified in the water quality and salinity management plan in Chapter 8;
 - (f) the views of:
 - (i) local communities, including bodies established by a Basin State that express community views in relation to environmental watering; and
 - (ii) persons materially affected by the management of environmental water;
 - (g) social, spiritual and cultural values of Indigenous people, as determined through consultation with traditional Indigenous owner organisations, where these align with or enhance environmental outcomes;
 - (h) optimising social, economic and environmental outcomes;
 - (i) any consultation or other information the Authority considers relevant to the co-ordination of environmental watering.
Example: The Authority may engage an individual scientist or scientific advisory committee to provide advice on aspects of Basin annual environmental watering priorities.
- (4) The Basin annual environmental watering priorities must be consistent with any environmental watering schedules to which the Authority is a party.
 - (5) The Authority must publish on its website the Basin annual environmental watering priorities before the commencement of the water accounting period to which they relate.
 - (6) The Authority may amend the Basin annual environmental watering priorities at any time, including during the water accounting period.
- Note: For the application of Basin annual environmental watering priorities see Part 7 of this Chapter.

Part 5—Methods for identifying environmental assets and ecosystem functions and their environmental watering requirements

7.26 Environmental assets and ecosystem functions database

- (1) The Authority must establish and maintain a database identifying information about environmental assets and ecosystem functions that require environmental watering (***environmental assets and ecosystem functions database***).

Note: This database is expected to include information used in the development of the Basin Plan which will be added to on an ongoing basis.

- (2) The database may be published on the Authority’s website.

7.27 Method for identifying environmental assets and their environmental watering requirements

An environmental asset that requires environmental watering, and its environmental watering requirements, must be identified having regard to the environmental assets and ecosystem functions database, using the following method:

- (a) identify any environmental asset that meets one or more of the assessment indicators for any of the 5 criteria specified in the table in Schedule 5; and
- (b) identify the environmental assets that can be managed with environmental water (*priority environmental assets*); and
- (c) for priority environmental assets, identify ecological objectives that are consistent with the criteria used to identify those assets; and

Example: If the environmental asset falls within the assessment indicator for Criterion 1 because it is a declared Ramsar wetland, the objectives must be directed towards maintaining the ecological character of the wetland.

- (d) identify ecological targets to achieve those objectives; and
- (e) in accordance with section 7.29 determine the environmental watering requirements needed to meet the targets in order to achieve the objectives.

7.28 Method for identifying ecosystem functions that require environmental watering and their environmental watering requirements

An ecosystem function that requires environmental watering to sustain it, and its environmental watering requirements, must be identified having regard to the environmental assets and ecosystem functions database, using the following method:

- (a) identify any ecosystem function that meets one or more of the assessment indicators for any of the 4 criteria specified in the table in Schedule 6; and
- (b) identify the ecosystem functions that can be managed with environmental water (*priority ecosystem functions*); and
- (c) for priority ecosystem functions, identify ecological objectives that are consistent with the criteria used to identify those ecosystem functions; and
- (d) identify ecological targets to achieve those objectives; and

- (e) in accordance with section 7.29, determine the environmental watering requirements needed to meet the targets in order to achieve the objectives.

7.29 Determination of the environmental watering requirements of environmental assets and ecosystem functions

- (1) The environmental watering requirements referred to in paragraphs 7.27(e) and 7.28(e) must:
 - (a) be supported by relevant information relating to the underlying physical geomorphic processes driving the flow-ecological relationship; and
Example: This may include a conceptual model.
 - (b) include the following flow components that are relevant to the watering requirements:
 - (i) cease-to-flow events;
 - (ii) low-flow-season base flows;
 - (iii) high-flow-season base flows;
 - (iv) low-flow-season freshes;
 - (v) high-flow-season freshes;
 - (vi) bank-full flows;
 - (vii) over-bank flows; and
 - (c) be determined having regard to:
 - (i) groundwater-derived base flows; and
 - (ii) groundwater recharge associated with groundwater resources that are highly connected to surface water resources; and
 - (d) be within the range of natural flow variability and seasonality.
- (2) The environmental watering requirements must be expressed, where relevant, in the following terms:
 - (a) a flow threshold or total flow volume;
 - (b) the required duration for that flow threshold, or the duration over which the volume should be delivered (as the case requires);
 - (c) the required timing of the flow event;
 - (d) the required frequency of the flow event;
 - (e) the maximum period between flow events;
 - (f) the extent and thresholds for any groundwater dependency;
 - (g) the required inundation depth at the site.

Part 6—Principles and method to determine the priorities for applying environmental water

Division 1—Principles to be applied to determine priorities

7.30 Principles to be applied to determine the priorities for applying environmental water

This Division sets out the principles to be applied to determine the priorities for applying environmental water.

7.31 Principle 1 – Consistency with principles of ecologically sustainable development and international agreements

Priorities for applying environmental water are:

- (a) to reflect the principles of ecologically sustainable development; and
- (b) not to be inconsistent with relevant international agreements; and

Note: A purpose of the Basin Plan, including Chapter 7, is to give effect to relevant international agreements (see ss 20(a) and 21(1), (2) and (3) of the Act). This provision is a further check to ensure that this purpose is achieved.

- (c) to be based on the best available knowledge of what is necessary to maintain the long-term resilience of the water-dependent ecosystem to risks and threats.

7.32 Principle 2 – Consistency with objectives

Priorities for applying environmental water are to be consistent with the objectives in Part 2.

7.33 Principle 3 – Flexibility and responsiveness

Priorities for applying environmental water are to be flexible and responsive so as to:

- (a) ensure that the management of all types of environmental water is co-ordinated between all holders of held environmental water and managers of planned environmental water to meet the overall environmental objectives for water-dependent ecosystems; and
- (b) ensure that regard is had to the views of:
 - (i) local communities, including bodies established by a Basin State that express community views in relation to environmental watering; and
 - (ii) persons materially affected by the management of environmental water; and

- (c) ensure that wherever possible water meets multiple objectives in order to maximise system-wide benefits; and
- (d) encourage innovative approaches to water management.

7.34 Principle 4 – Condition of environmental assets and ecosystem functions

Priorities for applying environmental water are to be determined having regard to matters relating to the condition of priority environmental assets and priority ecosystem functions, including:

- (a) the condition of the asset or function to be watered; and
- (b) relevant past conditions (for example, climate, drought, rainfall, flow history and fire); and
- (c) the urgency of the need to provide water to the asset or to sustain the function; and
- (d) the likely response of an asset or function to environmental watering, and the certainty of the change in condition based on previous experience or best available knowledge; and
- (e) the long-term sustainability of an asset or water-dependent ecosystem that supports a function; and
- (f) the existence of management plans relating to broader natural resource management matters; and
- (g) the effect on an asset or water-dependent ecosystem that supports a function if environmental water is not applied.

7.35 Principle 5 – Likely effectiveness and related matters

Priorities for applying environmental water are to be determined having regard to matters relating to the likely effectiveness of applying environmental water including:

- (a) limitations on the effectiveness of environmental water; and
- (b) cost effectiveness; and
- (c) the opportunity to take advantage of non-environmental water flows (including flows in unregulated systems and releases of water from storage) to realise multiple benefits; and
 - Example: The ability to use environmental water in concert with stock and domestic releases, or other releases for consumptive use.
- (d) the quantity of water and other resources needed to achieve the objectives in Part 2 relative to other options for applying that environmental water in order to meet those objectives; and
- (e) the extent and effectiveness of integration with other related natural resource management plans; and
- (f) optimising economic, social and environmental outcomes.

7.36 Principle 6 – Risks and related matters

Priorities for applying environmental water are to be determined having regard to matters relating to risk including:

- (a) potential risks, including downstream risks, that may result from the application of environmental water (for example, flooding private land with water released from a storage without prior agreement, fish kills or salinity impacts) and measures that may be taken to minimise the risks; and
- (b) ecological opportunity costs of using water for a particular environmental outcome instead of another environmental outcome; and

Example: This involves the identification of water-dependent ecosystems that will not receive water as a result of a particular watering decision.

- (c) impediments to the delivery of water to priority environmental assets and priority ecosystem functions, including risks of extraction of that water for other uses.

7.37 Principle 7 – Robust and transparent decisions

Priorities for applying environmental water are to be determined using robust, transparent and documented decision-making processes.

Division 2—Method to be used to determine priorities

7.38 Method to be used to determine priorities for applying environmental water

- (1) This section sets out the method to be used to determine priorities for applying environmental water.
- (2) The method to determine the priorities for applying environmental water is to:
 - (a) determine the resource availability scenario; and
 - (b) determine the management outcomes that apply to the resource availability scenario; and
 - (c) consistent with the management outcomes that apply to the resource availability scenario, determine the provisional priorities for applying environmental water by applying the principles set out in Division 1 to priority environmental assets and priority ecosystem functions; and
 - (d) refine those priorities based on seasonal, operational and management considerations in accordance with section 7.40.
- (3) When applying the method, a person must have regard to any guidelines published by the Authority.

7.39 Determining the resource availability scenario

- (1) A *resource availability scenario* is one of the following:
 - (a) very dry;
 - (b) dry;
 - (c) moderate;
 - (d) wet;
 - (e) very wet.
- (2) When determining the resource availability scenario, a person must have regard to any guidelines published by the Authority.

7.40 Operational and management considerations

The seasonal, operational and management considerations upon which priorities for applying environmental water are to be refined must be based on the following:

- (a) the best available knowledge of the environmental watering requirements of each priority environmental asset and priority ecosystem function, and of the system as a whole; and
- (b) the ecological objectives and ecological targets for each priority environmental asset and priority ecosystem function; and
- (c) information which identifies ecological responses to hydrology; and
Note: See also paragraph 7.29(1)(a).
- (d) recent flow history at each priority environmental asset and for each priority ecosystem function to assess antecedent conditions; and
- (e) forecasts of likely water availability; and
- (f) operational feasibility; and
- (g) evaluation and review of the results and effectiveness of previous environmental watering.

Part 7—Principles to be applied in environmental watering

Division 1—Principles to be applied in environmental watering

7.41 Principles to be applied in environmental watering

This Part sets out the principles to be applied in environmental watering.

Note 1: See sections 34 and 35 of the Act for the effect of these principles.

Note 2: See the definition of **environmental watering** in section 4 of the Act.

7.42 Principle 1 – Basin annual environmental watering priorities

Environmental watering is to be undertaken having regard to the Basin annual environmental watering priorities published by the Authority in accordance with section 7.25.

Note: There may be reasons why it is not possible in particular circumstances to undertake watering in accordance with these priorities. Section 7.52 then applies.

7.43 Principle 2 – Consistency with the objectives in Part 2

Environmental watering is to be undertaken consistently with the objectives in Part 2.

7.44 Principle 3 – Maximising environmental benefits

Subject to the principles in sections 7.42 and 7.43, environmental watering is to be undertaken in a way that:

- (a) maximises multiple environmental benefits of environmental watering; and
Example: Ensuring that the water achieves the best environmental outcomes including through multi-site watering *en route* to an intended priority environmental asset.
- (b) maximises its benefits and effectiveness by:
 - (i) co-ordinating environmental watering between all holders of held environmental water and managers of planned environmental water; and
 - (ii) co-ordinating environmental watering with flows regulated for consumptive use; and
 - (iii) utilising local knowledge and experience; and
 - (iv) giving effect to social, spiritual and cultural values of Indigenous people, as determined through consultation with traditional Indigenous owner organisations, where these align with or enhance environmental outcomes; and
 - (v) having regard to social and economic outcomes; and
- (c) enhances existing flow events, where possible, so as to ensure improvement in the delivery of a full range of flow conditions, including high flow events; and
- (d) takes into consideration the relative ecological benefits of applying environmental water to achieve one environmental outcome over another environmental outcome; and

- (e) takes into consideration the variability of the natural flow regime, for example, by mitigating or avoiding seasonal inversion of flows; and
- (f) incorporates strategies to deal with a variable and changing climate; and
- (g) enables information to be shared between the Authority, Commonwealth, Basin States, holders of held environmental water, and managers of planned environmental water to ensure efficient and effective use of environmental water.

7.45 Principle 4 – Risks

Environmental watering is to be undertaken having regard to:

- (a) potential risks, including downstream risks, that may result from applying environmental water and measures that may be taken to minimise the risks; and
- (b) risks arising from impediments to the delivery of water to water-dependent ecosystems, including risks of extraction of that water for other uses, and inadequate accounting of water flows.

7.46 Principle 5 – Cost of environmental watering

Environmental watering is to be undertaken having regard to the quantity of water and other resources required relative to the expected environmental benefits.

7.47 Principle 6 – Apply the precautionary principle

A lack of full scientific certainty as to whether there are threats of serious or irreversible environmental damage should not be used as a reason for postponing measures to prevent environmental degradation.

7.48 Principle 7 – Working effectively with local communities

Environmental watering should be undertaken having regard to the views of local communities, including bodies established by a Basin State that express community views in relation to environmental watering.

7.49 Principle 8 – Adaptive management

Environmental watering should be undertaken in a way that applies adaptive management including by:

- (a) setting clear objectives; and
- (b) linking knowledge, management, evaluation and feedback over a period of time; and
- (c) identifying and testing uncertainties; and
- (d) using management as a tool to learn about the relevant system and change its management; and

- (e) improving knowledge; and
- (f) giving consideration to both the social and technical aspects of management.

7.50 Principle 9 – Relevant international agreements

Environmental watering should be undertaken in a way that is not inconsistent with relevant international agreements.

Note: A purpose of the Basin Plan, including Chapter 7, is to give effect to relevant international agreements (see ss 20(a) and 21(1), (2) and (3) of the Act). This provision is a further check to ensure that this purpose is achieved.

7.51 Principle 10 – Other management and operational practices

River management and operational practices should be reviewed, and if necessary altered, to ensure that rivers can be managed to achieve multiple objectives, including the objectives in Part 2.

Division 2—Reporting in relation to Basin annual environmental watering priorities

7.52 Reporting required where Basin annual environmental watering priorities not followed

- (1) If a person undertakes environmental watering other than in accordance with the Basin annual environmental watering priorities, that person must give to the Authority a statement of reasons why environmental water has not been undertaken in accordance with the Basin annual environmental watering priorities.

Note: See section 25D of the *Acts Interpretation Act 1901* for content required in a statement of reasons.

- (2) The Authority may publish on its website a statement of reasons given under subsection (1).

Part 8—Planning for the recovery of additional environmental water

7.53 Planning for the recovery of additional environmental water

- (1) This section sets out the Authority's role in planning for the recovery of additional environmental water.
- (2) The Authority may prepare, and publish on its website, recommendations about where in the Murray-Darling Basin additional environmental water should be recovered (***environmental water recovery recommendations***).
- (3) Without limiting subsection (2), environmental water recovery recommendations may include the following:

- (a) priority areas for the recovery of environmental water;
Note: See section 1.07 for the meaning of **recovery of environmental water**.
 - (b) priorities for the recovery of certain types of water access rights;
 - (c) the reasoning on which those priorities are based.
Note: The reasoning may include models used by the Authority to identify priorities for the recovery of environmental water.
- (4) If a person:
- (a) acquires a water access right for the purpose of undertaking environmental watering; and
 - (b) does not acquire that right consistently with the environmental water recovery recommendations;
- then that person must, within 8 weeks of the acquisition, give to the Authority a statement of reasons for not doing so.
- Note: See section 25D of the *Acts Interpretation Act 1901* for content required in a statement of reasons.
- (5) The Authority may publish on its website a statement of reasons provided to it under subsection (4).

Chapter 8—Water quality and salinity management plan

Part 1—Preliminary

8.01 Simplified outline

- (1) This section sets out a simplified outline of this Chapter.
- (2) This Chapter sets out the water quality and salinity management plan (item 10 of the table in subsection 22(1) and section 25 of the Act).
- (3) The water quality and salinity management plan sets out:
 - (a) the key causes of water quality degradation in the Murray-Darling Basin (Part 2); and
 - (b) water quality objectives for Basin water resources (Part 3); and
 - (c) water quality targets (Part 4).

Note: The water quality and salinity management plan has been prepared having regard to the National Water Quality Management Strategy endorsed by the Natural Resource Management Ministerial Council (see subsection 25(3) of the Act).

Part 2—Key causes of water quality degradation in the Murray-Darling Basin

8.02 Types of water quality degradation and their key causes

- (1) The types of water quality degradation in the Murray-Darling Basin are the following:
 - (a) elevated levels of salinity;
 - (b) elevated levels of suspended matter;
 - (c) elevated levels of nutrients;
 - (d) elevated cyanobacteria cell counts or biovolume, toxins and odour compounds;
 - (e) water temperature outside natural ranges;
 - (f) dissolved oxygen outside natural ranges;
 - (g) elevated levels of pesticides and other contaminants;
 - (h) pH outside natural ranges;
 - (i) elevated pathogen counts.

- (2) The key causes of water quality degradation for each type of degradation are set out in Schedule 8.

Part 3—Water quality objectives for Basin water resources

8.03 Outline of this Part

This Part sets out the following water quality objectives for Basin water resources:

- (a) objectives for:
 - (i) declared Ramsar wetlands; and
 - (ii) other water-dependent ecosystems;
- (b) objectives for raw water for treatment for human consumption;
- (c) the objective for irrigation water;
- (d) the objective for recreational water quality;
- (e) the objective of ensuring no deterioration of water quality.

8.04 Objectives for water-dependent ecosystems

- (1) The water quality objective for declared Ramsar wetlands is that the quality of water is sufficient to maintain the ecological character of those wetlands consistent with their ecological character descriptions.

Note: See paragraph 21(3)(c) of the Act.

- (2) The water quality objective for water-dependent ecosystems other than declared Ramsar wetlands is that the quality of water is sufficient to achieve the objectives for water-dependent ecosystems described in Part 2 of Chapter 7.

8.05 Objectives for raw water for treatment for human consumption

The water quality objectives for raw water for treatment for human consumption are:

- (a) to minimise the risk that the quality of raw water taken for treatment for human consumption results in adverse human health effects; and
- (b) to maintain the palatability rating of water taken for treatment for human consumption at the level of good as set out in the ADWG; and

Note: See section 1.07 for the meaning of **ADWG**.

- (c) to minimise the risk that the quality of raw water taken for treatment for human consumption results in the odour of drinking water being offensive to consumers.

8.06 Objective for irrigation water

The water quality objective for irrigation water is that the quality of surface water, when used in accordance with best irrigation and crop management practices and principles of ecologically sustainable development, does not result in crop yield loss or soil degradation.

Note: See section 1.07 for the meaning of *soil degradation*.

8.07 Objective for recreational water quality

The water quality objective for recreational water quality is to achieve a low risk to human health from water quality threats posed by exposure through ingestion, inhalation or contact during recreational use of Basin water resources.

8.08 Objective – no deterioration of water quality

If the value of a water quality characteristic (for example, salinity, nutrients, pesticides, pH, turbidity) is at a level that is better than the target value for water quality set out in Part 4, an objective is to maintain that better value.

Part 4—Water quality targets

Division 1—Preliminary

8.09 Outline of this Part and purpose of targets

- (1) This Part sets out the following:
 - (a) water quality targets for water-dependent ecosystems (including water-dependent ecosystems that are declared Ramsar wetlands) (Division 2);
 - (b) water quality targets for raw water for treatment for human consumption (Division 3);
 - (c) water quality targets for irrigation water (Division 4);
 - (d) water quality targets for recreational water (Division 5);
 - (e) salinity targets for Basin-wide salinity management (Division 6).
 - (2) The targets:
 - (a) inform the development of certain measures which are required to be included in water resource plans (Part 7 of Chapter 9); and
 - (b) inform operational decisions relating to the management of water flows; and
- Note: See sections 7.25 (Basin annual environmental watering priorities) and 8.11.

- (c) will be used by the Authority to measure progress towards achieving the objectives in Part 3;

however, if a target is not achieved, this does not in itself mean that a person has acted inconsistently with the water quality and salinity management plan.

Note 1: These targets also inform the outcomes mentioned in section 12.04 and Schedule 10. It is expected that the Authority will enter into agreements with Basin States, ABARES, and the Director of Meteorology in relation to monitoring and reporting on matters relating to these targets, where applicable (see Part 4 of Chapter 12).

Note 2: See also section 12.11 which requires the Authority to review these targets.

8.10 More stringent target applies

If, for a Basin water resource, more than one target value set out in this Part applies for the same water quality characteristic (for example, salinity, nutrients, pesticides, pH, turbidity), the most stringent target value applies.

8.11 Certain target values to inform operational decisions

- (1) The Authority must have regard to the targets in subsection (5) when making operating decisions under the Agreement relating to the management of water flows.
- (2) The Basin Officials Committee must have regard to the targets in subsection (5) when carrying out its functions under the Agreement relating to the management of water flows.
- (3) An agency of a Basin State must have regard to the targets in subsection (5) when making decisions in relation to the licences and operating rights and obligations of operating authorities and infrastructure operators.
- (4) The Commonwealth Environmental Water Holder, holders of held environmental water and managers of planned environmental water must have regard to the targets in subsection (5) when making decisions about the use of environmental water.
- (5) For the purposes of subsections (1) to (4), the following targets apply:
 - (a) to maintain dissolved oxygen at a target value of at least 50% saturation;
Note: This equates to approximately 50% oxygen saturation at 25°C and 1 atmosphere of pressure.
 - (b) the targets for recreational water quality in Division 5;
 - (c) the salinity operational targets in Division 6.

Note 1: The salt load target is not to be considered for the purposes of the obligation in this section.

Note 2: Schedule B to the Agreement imposes obligations on the Commonwealth and Basin States in relation to decisions that may have a 'Significant Effect' on salinity, and how to account for these effects.

Division 2—Water quality targets for water-dependent ecosystems

8.12 Water quality targets for water-dependent ecosystems

- (1) The water quality targets for water-dependent ecosystems (including water-dependent ecosystems that are declared Ramsar wetlands) are that a water quality characteristic in a target application zone meets the target value set out in Schedule 9.
- (2) Despite subsection (1), for a declared Ramsar wetland, if:
 - (a) an ecological character description for that wetland is published on the Department's website before the commencement of the Basin Plan; and
 - (b) the ecological character description sets out the limits of acceptable change for water quality in that wetland;then the only target values are those that correspond to those limits.
- (3) The **target application zone**, of a particular name, means the area within the boundary described by the polygon of that name included in the dataset that:
 - (a) is titled *Water Quality Zones*; and
 - (b) has a dataset scale of 1:250,000; and
 - (c) is held by the Authority.
- (4) The Authority must publish on its website a map that:
 - (a) identifies each target application zone; and
 - (b) uses the dataset referred to in subsection (3).

Division 3—Water quality targets for raw water for human consumption

8.13 Water quality targets for raw water for treatment for human consumption

- (1) The water quality targets for raw water for treatment for human consumption are that the values for each water quality characteristic meet the target values set out in this section.
- (2) The target values in this section apply to surface water and groundwater at sites in the Murray-Darling Basin where water is

extracted by a water supply authority for treatment and supply for human consumption.

Note: Water resource plans are required to identify these sites (see section 9.38).

- (3) The target value for total dissolved solids (salinity) is 500 mg/L.

Note: This target value achieves a palatability rating of 'good' as provided for in the ADWG.

- (4) The target values for cyanobacteria cell counts or biovolume are the values that will ensure that there is a low risk that water, once treated by a water supply authority, will not meet the standards for treated water set out in the ADWG relating to:

- (a) odour compounds (geosmin and 2-methylisoborneol); and
(b) toxins (total microcystins, cylindrospermopsin, saxitoxins).

Note: Measures expected to be included in water resource plans to manage high cyanobacteria cell counts or biovolume (Part 7 of Chapter 9) will be relevant to the characteristics at paragraphs (4)(a) and (b). Research Report 74 titled 'Management Strategies for Cyanobacteria (Blue-Green Algae): A Guide for Water Utilities' and published by Water Quality Research Australia Limited in 2010 may be useful for deriving applicable targets.

Division 4—Water quality targets for irrigation water

8.14 Water quality targets for irrigation water

- (1) The water quality targets for irrigation water are that the values for a water quality characteristic meet the target values set out in this section.
- (2) The target values apply at sites in the Murray-Darling Basin where water is extracted by an irrigation infrastructure operator for the purpose of irrigation.

Note: Water resource plans are required to identify these sites (see section 9.38).

- (3) The target values are set out in the following table:

Item	Basin region	Salinity target (mg/L) – 95% of the time
1	Southern Basin (Murray River and tributaries)	500
2	Northern Basin (Barwon River and Darling River and their tributaries)	670

Note: To convert mg/L to EC, the following approximate conversion factors can be used: (a) for the Southern Basin (including the Lachlan river), EC = mg/L divided by 0.6; (b) for Northern Basin, EC = mg/L divided by 0.7; (c) for the Paroo and Warrego rivers, EC = mg/L divided by 0.8.

- (4) The target value for the sodium adsorption ratio of irrigation water is the value, which if exceeded would cause soil degradation when that water is applied to land.

Note: See section 1.07 for the meaning of *soil degradation*.

Division 5—Water quality targets for recreational water

8.15 Water quality targets for recreational water

The water quality targets for water used for recreational purposes are that the values for cyanobacteria cell counts or biovolume meet the guideline values set out in Chapter 6 of the Guidelines for Managing Risks in Recreational Water.

Division 6—Salinity targets

8.16 Salinity targets

- (1) This section sets out surface water salinity targets for the purpose of:
 - (a) long-term salinity planning for water resource plans; and
 - (b) monitoring and evaluating the effectiveness of the Basin Plan.
- (2) The salinity targets are the Murray-Darling Basin and End-of-Valley Targets for salinity (as absolute values) set out in Appendix 1 of Schedule B of the Agreement as amended from time to time.

8.17 Salt-load target

- (1) This section sets out the salt-load target for the River Murray System for the purpose of:
 - (a) monitoring and evaluating the effectiveness of the Basin Plan; and
 - (b) ensuring adequate flushing of salt to the ocean.
 - (2) The salt-load target is the discharge of a minimum of 2 million tonnes of salt from the River Murray System to the Southern Ocean each water accounting period.
 - (3) The Authority must estimate the discharge of salt from the River Murray System to the Southern Ocean every water accounting period.
 - (4) The Authority must assess achievement of the salt-load target against the number of tonnes of salt per year averaged over the preceding 10 years.
-

- (5) The Authority must publish its assessment on its website.

8.18 Salinity operational targets

- (1) This section sets out the salinity operational targets that apply for the purposes of section 8.11.
- (2) The targets are to meet the target values for the reporting sites specified in the following table:

Item	Reporting site	Target value (mg/L) – 95% of the time
1	River Murray at Murray Bridge	500
2	River Murray at Morgan	500
3	River Murray at Lock 7	310
4	Darling River downstream of Menindee Lakes at Burtundy	500

Chapter 9—Water resource plan requirements

Part 1—Preliminary

9.01 Simplified outline

- (1) This section sets out a simplified outline of this Chapter.
- (2) This Chapter sets out requirements in relation to the following matters that a water resource plan must comply with in order for it to be accredited or adopted under Division 2 of Part 2 of the Act (item 11 of the table in subsection 22(1) of the Act):
 - (a) the identification of the water resource plan area and other matters (Part 2);
 - (b) the incorporation, and application, of the long-term annual diversion limit for each SDL resource unit in the water resource plan area (Part 3);
 - (c) the sustainable use and management of water resources of the water resource plan area within the long-term annual diversion limits (Part 4);
 - (d) the regulation, for the purpose of managing Basin water resources, of interception activities with a significant impact (whether on an activity-by-activity basis or cumulatively) on those water resources (Part 5);
 - (e) planning for environmental watering (Part 6);
 - (f) water quality objectives for the water resource plan area (Part 7);
 - (g) the circumstances in which tradeable water rights in relation to the water resource plan area may be traded, and the conditions applicable to such trades (Part 8);
 - (h) the broad approaches to the way risks to the water resources of the water resource plan area should be addressed (Part 9);
 - (i) information about measuring the water taken from the water resources of the water resource plan area and monitoring the water resources of the water resource plan area (Part 10);
 - (j) reviews of the water resource plan and amendments of the plan arising from those reviews (Part 11);
 - (k) the scientific information or models on which the water resource plan is to be based (Part 12);
 - (l) planning for extreme events (Part 13);
 - (m) Indigenous values and uses (Part 14).

Part 2—Identification of water resource plan area and other matters

9.02 Identification of water resource plan area and water resources

- (1) A water resource plan must identify:
 - (a) the water resource plan area; and
 - (b) the water resources;
to which it applies.
- (2) The water resource plan area must be one of the water resource plan areas described in Part 2 of Chapter 3 and must be identified using the same description of that area set out in that Part (with any variations permitted by section 3.04).
- (3) The water resources must be those described in Part 2 of Chapter 3 as the water resources of the water resource plan area and must be identified using the same description of those water resources set out in that Part.

9.03 Identification of SDL resource units and water resources

- (1) A water resource plan must identify:
 - (a) each SDL resource unit in the water resource plan area; and
 - (b) the water resources within each SDL resource unit.
- (2) The SDL resource units must be those described in sections 6.02 and 6.03 and Schedules 2 and 4 as the SDL resource units within the water resource plan area, as applicable.
- (3) The water resources within each SDL resource unit must be those described in sections 6.02 and 6.03, and Schedules 2 and 4.

9.04 Water resource plan constituted by 2 or more instruments

- (1) If a water resource plan is constituted by 2 or more instruments or texts, this section applies to it.

Note: Subsection 63(1) of the Act states that a water resource plan may be constituted by 2 or more instruments.
- (2) The water resource plan must identify the instruments or texts that constitute the water resource plan.

Note: The same instrument or text may be used for more than one water resource plan.
- (3) If an instrument or text applies to only some of the water resources of the water resource plan area, the water resource plan must:

- (a) identify the water resources or parts of the water resources to which the instrument or text applies; and
- (b) include an indicative map of the water resources identified in paragraph (a).

9.05 Water resource plan to include index

A water resource plan must include an index which lists each requirement set out in this Chapter along with the specific part of the plan that addresses the requirement.

9.06 Material not forming part of the water resource plan

If a water resource plan is constituted by an instrument or text which contains additional material that is not part of the water resource plan, the water resource plan must identify that material.

Note: See paragraph (d) of the definition of *water resource plan* in section 4 of the Act.

9.07 Regard to other water resources

- (1) A water resource plan must be prepared having regard to the management and use of:
 - (a) the water resources of an adjacent water resource plan area; and
 - (b) any water resources which have a significant hydrological connection to the water resources of the water resource plan area.
- (2) The water resource plan must describe the way in which regard was had to the matters referred to in subsection (1).

9.08 Obligations to be specified

- (1) If this Chapter requires a matter to be dealt with in a water resource plan, the plan must specify the person responsible for that matter.
- (2) Without limiting subsection (1), if a water resource plan requires a measure or action to be undertaken, the plan must specify the person responsible for undertaking that measure or action.

9.09 Change in reliability

- (1) A water resource plan must, to the extent possible, meet each requirement of this Chapter in a way that will not result in a change in the reliability of water allocations in relation to the water resources of a water resource plan area.
- (2) However, if it is not possible to meet a requirement in such a way, the requirement has effect only to the extent that it does not result in such a change.

- (3) The change in reliability referred to in this section is a change in reliability of the kind dealt with by Subdivision B of Division 4 of Part 2 of the Act.

Part 3—Incorporation, and application, of the long-term annual diversion limit

Division 1—Water access rights

9.10 Water access rights must be identified

- (1) A water resource plan must identify the following:
 - (a) each form of take from the water resources of each SDL resource unit in the water resource plan area;
 - (b) the classes of water access right that apply to each form of take identified under paragraph (a);
 - (c) the characteristics of each class of right, including the number of rights and any conditions on the exercise of the rights.
- (2) A water resource plan must require a holder of a water access right to comply with the conditions of that right.

9.11 Identification of planned environmental water and register of held environmental water

- (1) A water resource plan must identify the planned environmental water in the water resource plan area and associated rules and arrangements relating to that water.
- (2) A water resource plan must establish and maintain a register of held environmental water for the water resource plan area which records:
 - (a) the characteristics of held environmental water in the water resource plan area (for example, quantity, reliability, security class, licence type, limitations); and
 - (b) who holds that water.
- (3) The register must be published on a website specified by the water resource plan.
- (4) The requirements in subsection (2) and (3) will be satisfied if a water resource plan identifies a register of held environmental water which records the matters required by subsection (2) and is published on a website.

Division 2—Take for consumptive use

9.12 Long-term annual diversion limits for each SDL resource unit to be specified

- (1) A water resource plan must state the long-term annual diversion limit for each SDL resource unit in the water resource plan area.

Note: See section 4 of the Act for the meaning of **long-term annual diversion limit**. Under the Basin Plan, the long-term annual diversion limit is the same as the long-term average sustainable diversion limit because the temporary diversion provision for each SDL resource unit is zero. Section 6.04 and Schedules 2 and 4 set out the long-term average sustainable diversion limits for each SDL resource unit. This section requires the information in those Schedules to be set out in the plan.

- (2) A water resource plan must specify an objective method (including modelling, if applicable) for calculating the predicted water system behaviour in relation to the long-term annual diversion limit for each SDL resource unit in the water resource plan area.

Note: This method (including modelling, if applicable) is used to estimate the water permitted to be taken in a water accounting period (see also section 9.14).

- (3) For a surface water SDL resource unit, the method (including modelling, if applicable) must use an analysis of predicted water system behaviour over a repeat of the historical climate conditions.

Note 1: See section 1.07 for the meaning of **historical climate conditions**.

Note 2: The method may, for example, be an estimate where there is insufficient information available.

9.13 Maximum long-term annual average quantity of water that can be taken

- (1) A water resource plan must specify the maximum long-term annual average quantity of water that can be taken from each SDL resource unit in the water resource plan area under the rules of the water resource plan for consumptive use.
- (2) From 1 July 2019, a quantity specified under subsection (1) must not exceed the long-term annual diversion limit that applies to the relevant SDL resource unit.
- (3) A water resource plan must specify an objective method (including modelling, if applicable) for demonstrating that, from 1 July 2019, the rules of the water resource plan operate to ensure that take from the SDL resource unit for consumptive use is less than or equal to the quantity specified in subsection (2).

- (4) For a surface water SDL resource unit, the method (including modelling, if applicable) must use an analysis of predicted water system behaviour over a repeat of the historical climate conditions.

Note 1: See section 1.07 for the meaning of *historical climate conditions*.

Note 2: The method may, for example, be an estimate where there is insufficient information available.

9.14 Annual quantity of water permitted to be taken

- (1) A water resource plan must determine the quantity of water permitted to be taken for consumptive use in a water accounting period:

- (a) by each form of take;
- (b) from each SDL resource unit in the water resource plan area.

Note: This is the annual expression of the long-term annual diversion limit and is used in the compliance method in Part 4 of Chapter 6 (in particular see section 6.11).

- (2) The quantity of water determined in subsection (1) must be determined consistently with the method (including modelling, if applicable) in subsection 9.12(2).
- (3) The water resource plan must be sufficiently certain to allow the quantity of water permitted to be taken in a water accounting period by a form of take from an SDL resource unit to be objectively determined.

9.15 Annual quantity of water that can be taken

- (1) A water resource plan must determine the quantity of water that can be taken for consumptive use in a water accounting period under the rules of the water resource plan:

- (a) by each form of take;
- (b) from each SDL resource unit in the water resource plan area.

- (2) The quantity of water determined in subsection (1) must be determined consistently with the method (including modelling, if applicable) in subsection 9.13(3).
- (3) The water resource plan must be sufficiently certain to allow the quantity of water that can be taken by a form of take from an SDL resource unit to be objectively determined.

9.16 Annual allocations must be determined

- (1) The water resource plan must provide for the determination of the water allocations to be made to water access entitlements in a water accounting period.
- (2) The water allocations must be determined consistently with the method used to estimate the quantity in section 9.13(3).

9.17 Matters relating to accounting for water

- (1) For the purposes of sections 9.14 and 9.15, the water resource plan must provide for the accounting for:
 - (a) water allocations that are carried over from one water accounting period to the next; and
 - (b) if it is a water resource plan area containing surface water – return flows, in a way that is consistent with arrangements under the Agreement immediately before the commencement of the Basin Plan; and
 - (c) trade of water access rights; and
 - (d) water resources which are hydrologically connected to the water resources of the SDL resource unit; and
 - (e) circumstances in which there is a change in the way water is taken or held under a water access right; and
 - (f) water sourced from the Great Artesian Basin and released into a Basin water resource, by excluding that water.
- (2) In applying paragraph (1)(c), the water resource plan must account for the disposal and acquisition of held environment water separately and in a way that does not alter the determinations made in accordance with sections 9.14 and 9.15.

9.18 Limits on certain forms of take

- (1) Subject to this section, a water resource plan must require that the long-term annual average quantity of water that can be taken from a surface water SDL resource unit for consumptive use by:
 - (a) take under a basic right; or
 - (b) take by a runoff dam; or
 - (c) net take by a commercial plantation;does not exceed the level specified in column 2 of Schedule 3 for that form of take.
- (2) The quantity specified in subsection (1) for a form of take may be increased above the level specified in column 2 of Schedule 3 for that form of take if:
 - (a) the long-term annual average quantity of water that can be taken by another form of take from the same SDL resource unit is changed at the same time so that there is no overall change in the total long-term annual average quantity of water that can be taken; and
 - (b) take by the forms of take affected by the changes are capable of:

- (i) being accurately measured (for example, through the use of a meter); or
 - (ii) in the case of a form of take that is not capable of being accurately measured at the time the water resource plan is submitted for accreditation or adoption – being reasonably estimated using the best available method immediately before the water resource plan is submitted; and
- (c) the changes are not expected to result in the take from the SDL resource unit ceasing to be an environmentally sustainable level of take.

9.19 Effects, and potential effects, on water resources of the water resource plan area

- (1) A water resource plan must identify the effect, or the potential effect, if any, of the use and management of water resources that are not in the water resource plan area on the use and management of the water resources of the water resource plan area.
- (2) Without limiting subsection (1), the water resource plan must identify the effect, or potential effect, if any, of the following on the use and management of the water resources of the water resource plan area:
 - (a) the taking of groundwater outside a groundwater SDL resource unit resulting in water being removed from that unit because of a pre-existing hydrological connection or a hydrological connection created by the process of taking; and
 - (b) the taking of surface water or groundwater resulting in water that would otherwise flow directly or indirectly into an SDL resource unit no longer flowing into that unit.
- (3) If a water resource plan identifies an effect, or potential effect, of the kind referred to in subsection (1), the water resource plan must set out:
 - (a) a process for monitoring that effect or potential effect; and
 - (b) actions that will be taken to respond to that effect or potential effect.
- (4) Without limiting paragraph (3)(b), the water resource plan may require a person to hold a water access right in the water resource plan area in relation to the effect, or potential effect, identified.
- (5) The requirement in subsection (1) applies whether or not the water resources that are not in the water resource plan area are a Basin water resource.

Division 3—Actual take

9.20 Determination of actual take must be specified

- (1) A water resource plan must require:
 - (a) the quantity of water actually taken for consumptive use, by each form of take from an SDL resource unit, to be determined; and
 - (b) the determination to be done using the best available method (including modelling, if applicable) at the time the determination of actual take is made; and
 - (c) records to be maintained showing how the determination was made, including the source of information relied on, and any method (including modelling, if applicable) used.

Note: Paragraph 71(1)(c) of the Act requires information mentioned in paragraph (a) of this section to be provided to the Authority.
- (2) For the purposes of paragraph (1)(a), the quantity of water actually taken must:
 - (a) include water that was held environmental water which was disposed of and then used in the SDL resource unit for consumptive use; and
 - (b) exclude water sourced from the Great Artesian Basin and released into and taken from a Basin water resource.

Part 4—The sustainable use and management of water resources

Division 1—Sustainable use and management

9.21 Sustainable use and management of water resources

This Part sets out the requirements in relation to the sustainable use and management of water resources of the water resource plan area within the long-term annual diversion limit for an SDL resource unit.

Division 2—Surface water

9.22 Priority environmental assets and priority ecosystem functions

- (1) A water resource plan must be prepared having regard to whether it is necessary for it to include rules which ensure that the environmental watering requirements of priority environmental assets and priority ecosystem functions are not compromised.

Note: Long-term watering plans are required to use the method in Part 5 of Chapter 7 to identify the environmental watering requirements of priority environmental assets and priority ecosystem functions.

- (2) Without limiting subsection (1), regard must be had to whether it is necessary for the rules to prescribe:
 - (a) the times, places and rates at which water is permitted to be taken from a surface water SDL resource unit; and
 - (b) how water resources in the water resource plan area must be managed and used.
- (3) If the outcome of the requirement in subsection (1) is that such rules are necessary, the water resource plan must include those rules.

Division 3—Groundwater

9.23 Priority environmental assets dependent on groundwater

- (1) A water resource plan must be prepared having regard to whether it is necessary for it to include rules which ensure that, for priority environmental assets that depend on groundwater, environmental watering requirements are not compromised.

Note: Long-term watering plans are required to use the method in Part 5 of Chapter 7 to identify the environmental watering requirements of priority environmental assets.

- (2) Without limiting subsection (1), regard must be had to whether it is necessary for the water resource plan to include rules that specify:
 - (a) the times, places and rates at which water is permitted to be taken from a groundwater SDL resource unit; and
 - (b) resource condition limits, being limits beyond which the taking of groundwater will, for a priority environmental asset that depends on groundwater, compromise an environmental watering requirement; and
 - (c) restrictions on the water permitted to be taken (including the times, places and rates at which water may be taken) in order to prevent a resource condition limit from being exceeded.
- (3) If the outcome of the requirement in subsection (1) is that such rules are necessary, the water resource plan must include those rules.

9.24 Groundwater and surface water connections

- (1) A water resource plan must be prepared having regard to whether it is necessary for it to include rules which ensure that, for groundwater that has a significant hydrological connection to surface water, environmental watering requirements (for example, base flows) are not compromised.

- (2) Without limiting subsection (1), regard must be had to whether it is necessary for the water resource plan to include rules that specify:
 - (a) the times, places and rates at which water is permitted to be taken from a groundwater SDL resource unit; and
 - (b) resource condition limits, being limits beyond which the taking of groundwater will compromise the discharge of water into any surface water resource; and
 - (c) restrictions on the water permitted to be taken (including the times, places and rates at which water may be taken) in order to prevent a resource condition limit from being exceeded.
- (3) If the outcome of the requirement in subsection (1) is that such rules are necessary, the water resource plan must include those rules.

9.25 Productive base of groundwater

- (1) A water resource plan must be prepared having regard to whether it is necessary for it to include rules which ensure that:
 - (a) there is no structural damage to an aquifer (whether within or outside the water resource plan area) arising from take within the long-term annual diversion limit for an SDL resource unit; and
 - (b) hydraulic relationships and properties between groundwater and surface water systems, between groundwater systems, and within groundwater systems are maintained.
- (2) Without limiting subsection (1), regard must be had to whether it is necessary for the water resource plan to include rules that specify:
 - (a) the times, places and rates at which water is permitted to be taken from a groundwater SDL resource unit; and
 - (b) any zones in the water resource plan area where continued groundwater extraction will result in a long-term decline in groundwater levels; and
 - (c) measures to prevent any long-term decline in groundwater levels in that zone, except where the groundwater is a non-renewable groundwater resource; and
 - (d) for a non-renewable groundwater resource – the planned rate of decline in groundwater levels and the anticipated groundwater levels after 50 years from the commencement of the water resource plan; and
 - (e) resource condition limits, being limits beyond which the taking of groundwater from the SDL resource unit will compromise the matters identified in paragraphs (1)(a) to (c); and

- (f) restrictions on the water permitted to be taken (including the times, places and rates at which water may be taken) in order to prevent a resource condition limit from being exceeded.
- (3) If the outcome of the requirement in subsection (1) is that such rules are necessary, the water resource plan must include those rules.

9.26 Environmental outcomes relating to groundwater

- (1) A water resource plan must be prepared having regard to whether it is necessary for it to include rules to prevent an unacceptable level of salinity or contaminants within a groundwater SDL resource unit.
- (2) Without limiting subsection (1), regard must be had to whether it is necessary for the water resource plan to include rules that specify:
 - (a) the times, places and rates at which water is permitted to be taken from a groundwater SDL resource unit; and
 - (b) resource condition limits, being limits beyond which the taking of groundwater from the groundwater SDL resource unit will result in an unacceptable level of salinity or contaminants; and
 - (c) restrictions on the water permitted to be taken (including the times, places and rates at which water may be taken) in order to prevent a resource condition limit from being exceeded; and
 - (d) a requirement to establish and maintain a register which identifies the sites of bores used to monitor salinity and contaminants in the groundwater SDL resource unit.
- (3) If the outcome of the requirement in subsection (1) is that such rules are necessary, the water resource plan must include those rules.

Division 4—How requirements have been met

9.27 Description of how requirements have been met

A water resource plan must:

- (a) describe what was done to comply with the requirements in this Part; and
- (b) if a risk of a kind referred to in subsection 9.45(2) has been identified in relation to the water resources of the water resource plan area - explain why rules addressing the risk have or have not been included in the plan.

Part 5—Interception activities

9.28 Listing classes of interception activity

- (1) A water resource plan must specify whether there are any classes of interception activity in the water resource plan area which have, or have the potential to have, a significant impact on:
 - (a) the water resources of the water resource plan area; or
 - (b) water resources which are hydrologically connected to the water resources of the water resource plan area;whether on an activity-by-activity basis, or cumulatively.
- (2) If there are any such classes of interception activity, the water resource plan must list those classes.
- (3) Without limiting subsection (2), if there are any of the following activities in the water resource plan area, the water resource plan must list them as classes of interception activity which have, or have the potential to have, a significant impact on the water resources of the water resource plan area:
 - (a) interception by a runoff dam;
 - (b) interception by a commercial plantation;
 - (c) interception by a mining activity, including coal seam gas mining;
 - (d) interception by floodplain harvesting.
- (4) For the purpose of determining whether a class of interception activity is of the kind referred to in subsection (1), regard must be had to the following factors:
 - (a) the location of particular activities of the class in the water resource plan area;
 - (b) the impact of the class on the availability of:
 - (i) the water resources of the water resource plan area; and
 - (ii) water resources which are hydrologically connected to the water resources of the water resource plan area;
 - (c) the projected growth of the class over the period for which the water resource plan will have effect.

9.29 Monitoring impact of interception activities

If a water resource plan includes a list of the kind referred to in subsection 9.28(2), the water resource plan must set out, in respect of each class of interception activity listed, a process for monitoring the impact of that class on:

- (a) the water resources of the water resource plan area; and
- (b) water resources which are hydrologically connected to the water resources of the water resource plan area.

9.30 Actions to be taken

A water resource plan must identify actions that will be taken in the event that monitoring under section 9.29 shows that:

- (a) an impact of a class of interception activity has a significant impact on an environmental watering requirement; or
- (b) an impact of several classes together has a significant impact on an environmental watering requirement; or
- (c) there is an increase in the quantity of water being intercepted by a class;

after the commencement of the water resource plan.

Note 1: This section provides a mechanism to address unanticipated effects of, or changes in, interception activity.

Note 2: Section 9.18 sets out the circumstances in which a water resource plan may allow for an increase in anticipated take by an interception activity.

Part 6—Planning for environmental watering

9.31 Planning for environmental watering

- (1) A water resource plan must provide for environmental watering to occur in a way that is consistent with the environmental watering plan and contributes to the achievement of the objectives in Part 2 of Chapter 7.
- (2) For the purposes of subsection (1), the water resource plan must be prepared having regard to:
 - (a) the most recent version of the long-term watering plan prepared in accordance with the requirements of Division 1 of Part 4 of Chapter 7; and
 - (b) the views of local communities, including bodies established by a Basin State that express community views in relation to environmental watering.

9.32 Enabling environmental watering between connected water resources

- (1) This section applies if:
 - (a) there are two water resource plan areas that contain surface water; and
 - (b) there is a surface water connection between the two areas.

- (2) The water resource plan for each of the areas must provide for the coordination of environmental watering between the two areas.

9.33 No net reduction in the protection of planned environmental water

A water resource plan must ensure that there is no net reduction in the protection of planned environmental water from the protection provided for under State water management law immediately before the commencement of the Basin Plan.

Part 7—Water quality objectives

Note: Section 1.07 defines *water quality* to include water salinity.

9.34 Water resource plan to include WQM Plan

A water resource plan must include a water quality management plan (*WQM Plan*). The WQM Plan must be made in accordance with this Part.

9.35 WQM Plan to identify key causes of water quality degradation

The WQM Plan must identify the causes, or likely causes, of water quality degradation in the water resource plan area having regard to the key causes of water quality degradation identified in Part 2 of Chapter 8.

9.36 WQM Plan to identify water quality target values

- (1) The WQM Plan must identify the water quality target values for the water resource plan area.
- (2) The water quality target values are the following:
 - (a) for water-dependent ecosystems - the applicable target values referred to in Division 2 of Part 4 of Chapter 8;
 - (b) for raw water for treatment for human consumption – the target values for water quality characteristics set out in Division 3 of Part 4 of Chapter 8;
 - (c) for irrigation water – the target values for water quality characteristics set out in Division 4 of Part 4 of Chapter 8;
 - (d) for water used for recreational purposes – the target values for water quality characteristics set out in Division 5 of Part 4 of Chapter 8;
 - (e) for salinity - the End-of-Valley Targets referred to in subsection 8.16(2).
- (3) However, if the objectively determined actual value of a water quality characteristic at a site is better than the target value identified in subsection (2), then the target value is that better value.

- (4) For a water quality target value other than:
- (a) a target value that applies to a declared Ramsar wetland under subsection 8.12(2); or
 - (b) an End-of-Valley Target referred to in subsection 8.16(2);
- the WQM Plan may specify an alternative water quality target value if:
- (c) it is consistent with the water quality objectives in Part 3 of Chapter 8; and
 - (d) for a declared Ramsar wetland – the target value is consistent with the ecological character description for that wetland; and
 - (e) it is determined in accordance with the procedures set out in the ANZECC Guidelines; and
 - (f) either:
 - (i) the alternative target value provides a better level of protection than the value that would apply under subsection (2) or (3), as applicable; or
 - (ii) the WQM Plan sets out reasons why the alternative target value will be as effective in achieving the objectives in Part 3 of Chapter 8; or
 - (iii) the WQM Plan sets out reasons why the target value in subsection (2) or (3), as applicable, is inappropriate for the water resource plan area; and
 - (g) for a water resource that is also covered by a water resource plan area of another Basin State – it is developed in consultation with that State.

9.37 WQM Plan to identify measures

- (1) The WQM Plan must specify measures to be undertaken in or in relation to the water resources of the water resource plan area that contribute to the achievement of the water quality objectives in Part 3 of Chapter 8.
- (2) The measures must be prepared having regard to:
 - (a) the causes of water quality degradation identified in accordance with section 9.35; and
 - (b) target values identified in accordance with section 9.36.
- (3) The measures may include matters relating to land management.

Note: See also subsections 22(9) to (12) of the Act.

9.38 WQM Plan to identify locations of certain targets

The WQM Plan must identify the locations in the water resource plan area at which the target values for raw water for treatment for human consumption and irrigation water apply.

9.39 Impact of WQM Plan on another Basin State

The measures specified in the WQM Plan must be developed having regard to:

- (a) the impact those measures (including the absence of adequate measures) may have on the ability of another Basin State to meet water quality targets; and
- (b) any adverse impacts those measures may have on Basin water resources in the other Basin State.

Note: See also the consultation requirement in subsection 63(2) of the Act.

Part 8—Trade of water access rights

9.40 Application of Part

This Part does not apply to water access rights of a kind that are not able to be traded under State water management law.

9.41 Circumstances in which conditions in section 11.23 are met

- (1) A water resource plan must set out the circumstances in which trade between 2 locations within a groundwater SDL resource unit is permitted. In setting out the circumstances, a water resource plan must ensure that each condition set out in section 11.23 will be met in relation to the proposed trade.
- (2) If the water resource plan applies a conversion rate to meet the condition in paragraph 11.23(d), the water resource plan must specify the conversion rate.

9.42 Circumstances in which conditions in section 11.24 are met

- (1) A water resource plan must set out the circumstances in which trade between 2 groundwater SDL resource units is permitted. In setting out the circumstances, a water resource plan must ensure that each condition set out in section 11.24 will be met in relation to proposed trade.
- (2) If the water resource plan applies a conversion rate to meet the condition in paragraph 11.24(e), the water resource plan must specify the conversion rate.

9.43 Circumstances in which conditions in section 11.25 are met

- (1) A water resource plan must set out the circumstances in which trade between a groundwater SDL resource unit and a surface water SDL resource unit is permitted. In setting out the circumstances, a water resource plan must ensure that each condition set out in section 11.25 will be met in relation to proposed trade.
- (2) If the water resource plan applies a conversion rate to meet the condition in paragraph 11.25(e), the water resource plan must specify the conversion rate.

Part 9—Approaches to addressing risks to water resources

9.44 Definitions

In this Part:

risk means a risk listed in a water resource plan in accordance with subsection 9.45(4).

risk factor means a factor described in a water resource plan in accordance with paragraph 9.46(b).

level of risk has the meaning given in AS/NZS ISO 31000:2009 *Risk Management - Principles and Guidelines*.

9.45 Risk identification and assessment methodology

- (1) A water resource plan must be prepared having regard to current and future significant risks to the condition and continued availability of the water resources of the water resource plan area.
 - (2) Without limiting subsection (1), the risks include (where applicable):
 - (a) risks to environmental watering requirements; and
 - (b) risks arising from the matters referred to in subsection 9.25(1); and
 - (c) risks arising from salinity or contaminants.
 - (3) In identifying risks for the purposes of subsection (1), regard must be had to:
 - (a) risks identified in section 4.02; and
 - (b) any guidelines published by the Authority in relation to risk identification and risk assessment.
 - (4) The water resource plan must list the risks identified for the purposes of subsection (1).
 - (5) The water resource plan must assess each risk.
-

- (6) The water resource plan must define the level of risk of each risk, using the following categories:
 - (a) low;
 - (b) medium;
 - (c) high;
 - (d) if it is considered appropriate, any additional category.
- (7) The water resource plan must describe the data and methods used to identify and assess the risks.
- (8) The water resource plan must describe any quantified uncertainties in the level of risk attributed to each risk, including the results of any sensitivity analysis.

9.46 Description of risks and risk factors

A water resource plan must describe:

- (a) each risk which is defined in accordance with subsection 9.45(6) as having a medium or higher level of risk; and
- (b) risk factors that contribute to those risks.

9.47 Strategies for addressing risks

- (1) If a water resource plan defines a risk in accordance with subsection 9.45(6) as having a medium or higher level of risk, the water resource plan must either:
 - (a) describe a strategy for the management of the water resources of the water resource plan area that will address the risk; or
 - (b) explain why the risk cannot be addressed by the water resource plan.
- (2) If the water resource plan identifies a risk which relates to a matter dealt with by a requirement in another Part of this Chapter, the strategy must take account of that requirement.
- (3) A water resource plan must be prepared having regard to:
 - (a) the strategies listed in subsection 4.03(3); and
 - (b) any guidelines published by the Authority in accordance with section 4.04.

Note: The Authority may publish guidelines in accordance with section 4.04 in relation to the implementation of strategies to manage or address risks identified in section 4.02.

Part 10—Measuring and monitoring

9.48 Information relating to measuring take – water access entitlements

A water resource plan must include the following information in relation to each class of water access right relating to the water resources of the water resource plan area:

- (a) the best estimate of the total long-term annual average quantity of water taken that is measured;
- (b) the best estimate of the total long-term annual average quantity of water taken that is not measured;
- (c) how the quantities under paragraphs (a) and (b) were calculated;
- (d) the proportion of the quantity referred to in paragraph (a) that is measured in accordance with standards for measuring agreed by the Basin States and the Commonwealth.

9.49 Improving measuring

- (1) A water resource plan must specify measures for maintaining and, if practicable, improving:
 - (a) the proportion of take that is measured in the water resource plan area; and
 - (b) the standard to which take is measured.
- (2) The water resource plan must specify the timeframe for implementing the measures.

9.50 Monitoring water resources

A water resource plan must provide that any monitoring of the water resources of the water resource plan area must be undertaken in a way which is consistent with Chapter 12.

Part 11—Reviews of water resource plans

9.51 Review of water resource plans

A water resource plan must require that if a review of the plan is undertaken, the report of the review must be provided to the Authority within 30 days after the report is completed.

9.52 Amendment of water resource plan

A water resource plan must require a Basin State that proposes an amendment to a water resource plan arising from a review to provide the reasons for the amendment to the Authority.

Note: See also section 65 of the Act.

Part 12—Information used to prepare water resource plan

9.53 Best available information

- (1) A water resource plan must be based on the best available information.
- (2) The water resource plan must identify and describe the significant sources of information on which the water resource plan is based.

9.54 Methods used to develop water resource plan

A water resource plan must identify any significant method, model or tool that has been used to develop the water resource plan.

Part 13—Extreme events

9.55 Measures in response to extreme events

- (1) A water resource plan must describe how the water resources of the water resource plan area will be managed during the following types of events:
 - (a) an extreme dry period;
 - (b) a water quality event of an intensity, magnitude and duration that is sufficient to render water acutely toxic or unusable for established local uses and values;
 - (c) any type of event that has resulted in the suspension of a statutory regional water plan in the past 50 years (including a transitional water resource plan or interim water resource plan).
- (2) If an event of a type listed in subsection (1) would compromise a Basin State's ability to meet critical human water needs in the water resource plan area, the water resource plan must set out measures to meet critical human water needs during such an event.
- (3) The water resource plan must provide that, if new scientific information suggests a change in the likelihood of an event of a type listed in subsection (1) occurring (for example, due to climate change), consideration must be given to whether, as a result of this new information, the water resources should be managed differently.

Part 14—Indigenous values and uses

Note: If a water resource plan is prepared by a Basin State, it is expected that the Authority will consult with relevant Indigenous organisations in relation to whether the requirements of this Part have been met, for the purposes of paragraph 63(3)(b) of the Act.

9.56 Objectives and outcomes based on Indigenous values and uses

- (1) A water resource plan must identify:
 - (a) the objectives of Indigenous people in relation to managing the water resources of the water resource plan area; and
 - (b) the outcomes for the management of the water resources of the water resource plan area that are desired by Indigenous people.
- (2) In identifying the matters set out in subsection (1), regard must be had to:
 - (a) the social, spiritual and cultural values of Indigenous people that relate to the water resources of the water resource plan area (**Indigenous values**); and
 - (b) the social, spiritual and cultural uses of the water resources of the water resource plan area by Indigenous people (**Indigenous uses**);as determined through consultation with relevant Indigenous organisations, including the Murray Lower Darling Rivers Indigenous Nations and the Northern Murray-Darling Basin Aboriginal Nations, where appropriate.
- (3) The water resource plan must be prepared having regard to the desirability of minimising any risks to Indigenous values and Indigenous uses arising from the use and management of the water resources of the water resource plan area.
- (4) The water resource plan may identify opportunities to strengthen the protection of Indigenous values and Indigenous uses in accordance with the objectives and outcomes identified under subsection (1).

9.57 Consultation and preparation of water resource plan

- (1) A water resource plan must be prepared having regard to consultation undertaken co-operatively and in good faith with relevant Indigenous organisations with respect to the matters identified under section 9.56 and the following matters:
 - (a) native title rights, native title claims and Indigenous Land Use Agreements provided for by the *Native Title Act 1993* in relation to the water resources of the water resource plan area;

- (b) inclusion of Indigenous representation in the preparation and implementation of the plan, where possible;
- (c) Indigenous social, cultural, spiritual and customary objectives, and strategies for achieving these objectives where possible;
- (d) encouragement of active and informed participation of Indigenous people.

Note: For examples of the principles that may be applied in relation to the participation of Indigenous people, see the document titled 'MLDRIN and NBAN Principles of Indigenous Engagement in the Murray-Darling Basin'.

9.58 Cultural flows

A water resource plan must be prepared having regard to the views of Indigenous people with respect to cultural flows.

9.59 Retention of current protection

A water resource plan must provide at least the same level of protection of Indigenous values and Indigenous uses as provided in:

- (a) a transitional water resource plan for the water resource plan area; or
- (b) an interim water resource plan for the water resource plan area.

Chapter 10—Critical human water needs

Note: See subsection 86A(2) of the Act for the meaning of *critical human water needs*.

Part 1—Preliminary

10.01 Simplified outline

- (1) This section sets out a simplified outline of this Chapter.
- (2) This Chapter sets out the following matters in relation to critical human water needs (sections 86B, 86C, 86D and 86E of the Act):
 - (a) the amount of water required to meet critical human water needs, and the water quality and salinity trigger points (Part 2);
 - (b) monitoring, assessment and risk management relating to critical human water needs (Part 3);
 - (c) matters in relation to Tier 2 water sharing arrangements (Part 4);
 - (d) matters in relation to Tier 3 water sharing arrangements (Part 5).

10.02 Meaning of *water accounting period*

In this Chapter:

water accounting period means a period of 12 months beginning on 1 June of any year.

Part 2—Water required to meet critical human water needs

10.03 Amount of water required to meet critical human water needs (Act paragraph 86B(1)(a))

For each Basin State that is a referring State (other than Queensland) the amount of water required to meet the critical human water needs of the communities in the State that are dependent on the waters of the River Murray System is:

- (a) New South Wales — 61 GL per water accounting period;
- (b) Victoria — 77 GL per water accounting period;
- (c) South Australia — 204 GL per water accounting period.

10.04 Conveyance water required to deliver water for critical human water needs (Act paragraph 86B(1)(b))

The amount of conveyance water required to deliver the water referred to in section 10.03 is 1596 GL per water accounting period.

Note 1: The amount specified in this section is based on observed losses from the major storages and the River Murray upstream of the South Australian border during years of low water availability. The amount specified in this section also includes the amount specified in clause 88(b) of the Agreement.

Note 2: See subsection 86A(4) of the Act for the meaning of **conveyance water**.

10.05 Water quality and salinity trigger points (Act paragraph 86B(1)(c))

- (1) This section specifies water quality trigger points and salinity trigger points at which water in the River Murray System becomes unsuitable for meeting critical human water needs.

Note: Section 86F of the Act provides for emergency responses when a water quality trigger point or a salinity trigger point specified in this Part is reached.

Salinity trigger points

- (2) A salinity trigger point is reached if a member of the Basin Officials Committee advises the Authority that:
- (a) a water supply authority has taken raw water from the River Murray System, at any site that is upstream from Wellington, for the purpose of treatment and supply for human consumption; and
 - (b) the level of salinity in that water is 840 mg/L of total dissolved solids or greater.

Water quality trigger points

- (3) A water quality trigger point is reached if a member of the Basin Officials Committee advises the Authority that:
- (a) a water supply authority has taken raw water from the River Murray System, at any site that is upstream from Wellington, for the purpose of treatment and supply for human consumption; and
 - (b) the level of a human health related water quality characteristic of the water makes it impracticable for the water supply authority to treat the water so that it meets the requirements of the ADWG; and
 - (c) it is expected that the water quality characteristic of water taken at the site will remain at such a level.

Part 3—Monitoring, assessment and risk management

Note: For the purposes of paragraph 86C(1)(a) of the Act, arrangements for monitoring matters that are relevant to critical human water needs are dealt with in Chapter 12.

10.06 Process for assessing inflow prediction (Act paragraph 86C(1)(b))

River Murray System

- (1) The process by which the Authority must assess inflow prediction for the River Murray System involves:
 - (a) monitoring the volume of inflow; and
 - (b) having regard to the best available information about likely inflow, including:
 - (i) tributary inflow estimates provided by the Basin States; and
 - (ii) information about daily, monthly and seasonal rainfall, temperature and climate; and
 - (c) regularly reviewing trends in climate and inflow patterns.

Snowy water licence

- (2) The processes by which the Authority must assess inflow prediction, in relation to works that are under the control of the body that is entitled, under the *Snowy Hydro Corporatisation Act 1997* of New South Wales, to the Snowy water licence within the meaning of that Act, are set out in Part III of Schedule F to the Agreement.

Inflow prediction

- (3) The Authority must use the processes set out in subsections (1) and (2) to prepare a range of predictions of possible inflow into the River Murray System.

10.07 Process for managing risks to critical human water needs associated with inflow prediction (Act paragraph 86C(1)(b))

- (1) The Authority must manage the risks to critical human water needs in the River Murray System associated with inflow prediction in accordance with this section.
- (2) Based on the inflow predictions and other information mentioned in section 10.06 and the forecasts of water quality mentioned in paragraph (4)(c), the Authority must identify risk factors and assess the risks of the following events:

- (a) the full amount of the amount of conveyance water specified in section 10.04 will not be available;
 - (b) the full amount of conveyance water to be reserved under subsection 10.12(2) will not be available;
 - (c) water quality and salinity triggers under section 10.05 will be reached.
- (3) If the Authority's assessment of inflow prediction indicates that advances under clause 102C or Schedule H of the Agreement may be required in a water accounting period, the Authority must identify and assess the risks to critical human water needs associated with such advances.
- (4) The Authority must manage the risks to critical human water needs associated with inflow prediction by managing the operation of the River Murray System in accordance with the Agreement having regard to:
- (a) the efficient and effective operation of the River Murray System; and
 - (b) the need to operate the River Murray System so as to ensure that there is water in the system that is of a suitable quality to meet critical human water needs; and
 - (c) monitoring and forecasting of water quality in the River Murray System and communication between the Authority, Basin States and private providers of data about water quality; and
 - (d) the need to undertake water resource assessments, including worst case planning water resource assessments; and
 - (e) the Authority's obligations under clause 50 of the Agreement; and
 - (f) the need to set aside, and draw upon, a conveyance reserve in accordance with Division 2 of Part 4 of this Chapter; and
 - (g) the need to operate the River Murray System in co-ordination with the operation of:
 - (i) works that are under the control of the body that is entitled, under the *Snowy Hydro Corporatisation Act 1997* of New South Wales, to the Snowy water licence within the meaning of that Act; and
 - (ii) tributaries of the River Murray System, in particular the operation of the Goulburn River in Victoria and the Murrumbidgee River in New South Wales; and
 - (iii) the Menindee Lakes Storage when it is under the control of New South Wales.

**10.08 Risk management approach for inter-annual planning
(Act paragraph 86C(1)(c))**

- (1) The Authority's risk management approach for inter-annual planning relating to arrangements for critical human water needs must be based on:
 - (a) the inflow predictions and other information mentioned in section 10.06; and
 - (b) the risk assessments made, the risk management approaches and measures adopted, and the information gathered under section 10.07; and
 - (c) the efficient operation of the River Murray System in accordance with the Agreement and the 'Objectives and Outcomes' document prepared under clause 31 of the Agreement.
- (2) The Authority must have regard to:
 - (a) water resource assessments; and
 - (b) accounts kept by the Authority in accordance with Subdivision D of Division 1 of Part XII of the Agreement;when making decisions about:
 - (c) the volume of water to be made available to the Basin States, in a particular year; and
 - (d) whether water is set aside in the conveyance reserve for future years.

Note: Part XII of the Agreement will also apply to the Authority in making such decisions.
- (3) A Basin State must have regard to advice from the Authority regarding the volume of water to be made available to it in a particular year, when making decisions about whether water is made available for uses other than meeting critical human water needs.
- (4) When Tier 3 water sharing arrangements apply, the Ministerial Council must have regard to the water accounts and water resource assessments when making decisions about:
 - (a) whether water is made available, in a particular year, for uses other than meeting critical human water needs; and
 - (b) whether water is set aside in the conveyance reserve for future years.

Note: Part 5 of this Chapter deals with when Tier 3 water sharing arrangements commence and when they cease to apply.

Part 4—Tier 2 water sharing arrangements

Note: See Division 2 of Part XII of the Agreement for Tier 2 water sharing arrangements.

Division 1—When Tier 2 water sharing arrangements apply

10.09 Commencement of Tier 2 water sharing arrangements (Act paragraph 86D(1)(a))

- (1) If the Authority is satisfied that either subsection (2) or subsection (3) applies, it may, by a notice published on its website:
 - (a) declare which of the subsections applies; and
 - (b) declare that Tier 1 water sharing arrangements cease, and Tier 2 water sharing arrangements enter into effect from the date specified in the notice.

Note 1: See Division 1 of Part XII of the Agreement for Tier 1 water sharing arrangements.

Note 2: Tier 2 water sharing arrangements can also commence under subsection 10.16(1) if Tier 3 arrangements cease to apply.

Insufficient water to provide conveyance water in current water accounting period

- (2) This subsection applies if at any time between the first day in June and the last day in August of the same water accounting period, the worst case planning water resource assessment indicates that the balance of the amount of conveyance water specified in section 10.04 cannot be supplied for the remainder of that water accounting period.

Insufficient water to set aside conveyance reserve for next water accounting period

- (3) This subsection applies if at any time between the first day in September and the last day in May of the same water accounting period, the worst case planning water resource assessment indicates that the amount of conveyance water required to be reserved under subsection 10.12(2) cannot be set aside by the end of that water accounting period.

No allowance for the use of advances or remedial action

- (4) In deciding whether subsection (2) or subsection (3) applies, no account is to be taken of any use of advances or of any remedial action undertaken in accordance with clause 10 of Schedule H to the Agreement.

10.10 Cessation of Tier 2 water sharing arrangements (Act paragraph 86D(1)(b))

- (1) If Tier 2 water sharing arrangements are in effect, but the Authority is satisfied that subsection (2) applies, it may, by a notice published on its website:
 - (a) declare that the subsection applies;
 - (b) declare that Tier 2 water sharing arrangements cease, and Tier 1 water sharing arrangements enter into effect, on the date specified in the notice.
- (2) This subsection applies if:
 - (a) the worst case planning water resource assessment indicates that:
 - (i) the balance of the amount of conveyance water specified in section 10.04 can be supplied for the remainder of the current water accounting period; and
 - (ii) the amount of conveyance water specified in subsection 10.12(2) can be set aside by the end of the current water accounting period; and
 - (b) the Basin Officials Committee has not determined that an advance is required in the current water accounting period.

No allowance for the use of advances or remedial action

- (3) In determining whether paragraph (2)(a) applies, no account is to be taken of any use of advances or of any remedial action undertaken in accordance with clause 10 of Schedule H to the Agreement.

Division 2—Tier 2 reserves policy

10.11 Reserves policy (Act paragraph 86D(1)(c))

This Division specifies the reserves policy that applies for periods during which Tier 2 water sharing arrangements apply.

10.12 Meeting the annual shortfall in conveyance water

- (1) For subsection 86D(2) of the Act, the shortfall in conveyance water is 620 GL in each year.

Note: The amount is based on the conveyance water amount set in section 10.04 and a minimum historical inflow of 980 GL. It may change if the Ministerial Council approves another amount.

- (2) For subparagraph 86D(1)(c)(i) of the Act, the annual volume of water required to be reserved by the end of a water accounting period to meet the shortfall in conveyance water is 225 GL.

Note: The amount is based on hydrological modelling. It may change if the Ministerial Council approves another amount based on different models.

- (3) For subparagraph 86D(1)(c)(ii) of the Act, the volume of water specified in subsection (2) must not vary between years.
- (4) For subparagraph 102D(2)(a)(ii) of the Agreement, the volume determined in accordance with the Basin Plan is the volume of water specified in subsection (2).

Note 1: While the volume of water specified in subsection 10.12(2) does not vary between years, the volume of water in the conveyance reserve may vary from time to time, owing to the use of the conveyance reserve in accordance with this Part and changes in applicable water sharing arrangements. See section 10.13.

Note 2: The volume of water specified in subsection 10.12(1) has been determined by the Authority in accordance with subsection 86D(2) of the Act on the basis of the minimum inflow sequence to the River Murray System (used by the Authority for planning purposes) including minimum inflows from the Murrumbidgee, Darling and Goulburn Rivers.

10.13 Application of the conveyance reserve provisions of the Agreement

For the purposes of paragraph 86D(1)(c) of the Act, the arrangements that are to apply to ensure that the volume of water specified in subsection 10.12(2) will be reserved and provided are set out in clause 102D of the Agreement and Schedule H to the Agreement.

10.14 Arrangements for carrying water over in storage

- (1) South Australia has the rights provided for in clauses 91 and 130 of the Agreement to store its entitlement to water.
- (2) Without limiting the operation of Part XII of the Agreement, New South Wales and Victoria have the right to carry over water in storage described in paragraph 135(14)(a) of the Agreement.
- (3) New South Wales, Victoria and South Australia are each responsible for meeting the critical human water needs of that State and for deciding how water from their respective water share is used.

Part 5—Tier 3 water sharing arrangements

Note: See Division 3 of Part XII of the Agreement for Tier 3 water sharing arrangements.

10.15 Commencement of Tier 3 water sharing arrangements (Act paragraph 86E(1)(a))

- (1) If the Authority is satisfied that either subsection (2) or subsection (3) applies, it may, by a notice published on its website:
 - (a) declare which of the subsections applies; and

- (b) declare that Tier 1 or Tier 2 water sharing arrangements cease, and Tier 3 water sharing arrangements enter into effect, on the date specified in the notice.
- (2) This subsection applies if, in either:
 - (a) circumstances of extreme and unprecedented low levels of water availability in the River Murray System; or
 - (b) circumstances in which there is an extremely high risk that water will not be available in the River Murray System to meet critical human water needs in the next 12 months;either of the following paragraphs applies:
 - (c) the worst case planning water resource assessment indicates that at least one of the amounts of water specified in section 10.03 cannot be supplied by the end of the current water accounting period; or
 - (d) the worst case planning water resource assessment indicates that the amount of water specified in section 10.04 cannot be supplied by the end of the current water accounting period, taking into account the use of any remedial action undertaken in accordance with clause 10 of Schedule H to the Agreement.
- (3) This subsection applies if, in circumstances of extreme and unprecedented poor water quality in the water available in the River Murray System to meet critical human water needs, a water quality trigger point specified in subsection 10.05(3) is reached.
- (4) If Tier 1 water sharing arrangements cease in accordance with paragraph (1)(b), Tier 2 water sharing arrangements are:
 - (a) taken to have entered into effect immediately upon the cessation of Tier 3 water sharing arrangements; and
 - (b) taken to have ceased immediately afterwards.

10.16 Cessation of Tier 3 water sharing arrangements (Act paragraph 86E(1)(b))

- (1) If Tier 3 water sharing arrangements are in place, but the Authority is satisfied that subsections (3) and (4) apply, it may, by a notice published on its website:
 - (a) declare that both the subsections apply; and
 - (b) declare that Tier 3 water sharing arrangements cease, and Tier 2 water sharing arrangements enter into effect, on the date specified in the notice.
- (2) If the Authority is satisfied that subsections (3) and (4) apply and also that subsection 10.10(2) is satisfied, it may, by a notice published on its website:

- (a) declare that all the subsections apply; and
 - (b) declare that Tier 3 water sharing arrangements cease to have effect, and Tier 1 water sharing arrangements enter into effect, on the date specified in the notice.
- (3) This subsection applies if the worst case planning water resource assessment indicates that:
 - (a) the amounts of water specified in section 10.03 can be supplied by the end of the current water accounting period; and
 - (b) the amount of conveyance water specified in section 10.04 can be supplied by the end of the current water accounting period, taking into account the use of any remedial action undertaken in accordance with clause 10 of Schedule H to the Agreement.
- (4) This subsection applies if:
 - (a) raw water has been taken by a water supply authority in accordance with paragraph 10.05(3)(a); and
 - (b) the levels of human health related water quality characteristic of the water make it practicable for the water supply authority to treat the water so that it meets the requirements of the ADWG; and
 - (c) it is expected that it will remain practicable for the water supply authority to treat the water so that it meets the requirements of the ADWG.
- (5) If Tier 1 water sharing arrangements enter into effect in accordance with subsection (2), Tier 2 water sharing arrangements are:
 - (a) taken to have entered into effect immediately upon the cessation of Tier 3 water sharing arrangements; and
 - (b) taken to have ceased immediately afterwards.

Chapter 11—Water trading rules

Part 1—Preliminary

11.01 Simplified outline

- (1) This section sets out a simplified outline of this Chapter.
- (2) This Chapter sets out the water trading rules (item 12 of the table in subsection 22(1) of the Act) which deal with the following:
 - (a) restrictions on the trade of tradeable water rights (Part 2);
 - (b) information which must be provided by irrigation infrastructure operators in relation to water delivery rights and irrigation rights (Part 3);
 - (c) disclosure obligations of approval authorities (Part 4);
 - (d) information which must be made available by Basin States and irrigation infrastructure operators (Part 5).

11.02 Application of Chapter to certain water access rights

This Chapter does not apply to water access rights of a kind that are not able to be traded under State water management law.

11.03 References to water delivery rights

- (1) In this Chapter, a reference to a water delivery right is a reference to a water delivery right with the following characteristics:
 - (a) the right is held against an irrigation infrastructure operator; and
 - (b) the delivery of water pursuant to the right requires the irrigation infrastructure operator to divert the water from a natural watercourse.
- (2) In this Chapter, a reference to the trade of a water delivery right includes a trade of part or all of the entitlement to delivery under a water delivery right.

11.04 Reference to a trade between places

A reference to the trade of a water access right to or between places (for example trading zones, locations, areas, resources or systems) is a reference to a trade which results in a change of location at which the water to which the right relates may be taken.

11.05 Recovery of loss or damage

A person who suffers loss or damage as a result of conduct of another person, other than an agency of a Basin State, that contravenes a section specified in the table at the foot of this section may recover the amount of the loss or damage by action against that other person.

Table

Item	Section
1	11.06
2	11.07
3	11.08
4	11.09
5	11.10
6	11.11
7	11.12
8	11.13
9	11.14
10	11.15
11	11.16
12	11.20
13	11.22
14	11.23
15	11.24
16	11.25
17	11.27
18	11.29
19	11.30
20	11.32
21	11.33
22	11.34
23	11.35
24	11.37
25	11.38
26	11.39
27	11.49

Note: See subsection 26(5) of the Act.

Part 2—Restrictions on trade of tradeable water rights

Division 1—Trade of water access rights

Subdivision A—All water resources – right to trade free of certain restrictions

11.06 Separate rights

(1) A person may trade a water access right free of any condition as to the holding, buying, selling, obtaining, accepting, or terminating of a separate location-related right.

(2) In this section:

location-related right means any of the following:

- (a) water delivery right;
- (b) works approval;
- (c) water use approval.

11.07 Class of persons

A person may trade a water access right free of any condition as to the person being, or not being, a member of a particular class of persons.

Note 1: An example of a class of persons is 'environmental water user'.

Note 2: See also section 11.26.

11.08 Purpose for which water is used

(1) A person may trade a water access right free of any condition as to the purpose for which the water relating to that right has been, or will be, used.

(2) This section does not apply to a water access right that is a stock and domestic right.

(3) This section does not apply to the trade of a water access entitlement designated for an urban water supply activity under State water management law.

11.09 Take and use of water after a trade

A person may take and use water under a water access right free of any restriction arising from the fact that the person acquired the water access right by way of trade.

11.10 Use outside Murray-Darling Basin

A person may trade a water access right free of any restriction arising from the fact that water extracted under the right might be transported or used outside the Murray-Darling Basin.

11.11 Trade of water allocation which has been carried over

- (1) A person may trade a water allocation free of any restriction arising from the fact that the water allocation was carried over from the previous water accounting period under a carryover arrangement.
- (2) Subsection (1) does not apply if:
 - (a) a carryover announcement is required before the water allocation is permitted to be taken or traded; and
 - (b) no such announcement has been made.

11.12 Access to carryover for traded water access rights

- (1) A person may participate in a carryover arrangement in relation to a water access right free of any restriction arising from the fact that the person acquired the water access right by way of trade.
- (2) Despite subsection (1), if:
 - (a) the trade of a water access right results in a change of the water resource to which the right relates; and
 - (b) the carryover arrangement for the destination water resource is different from that of the origin water resource;the carryover arrangement for the destination water resource may be applied to the water access right.

Note: See sections 11.20 and 11.21.

11.13 Overallocation

A person may trade a water access right within a water resource free of any restriction based on the fact that a water resource is overallocated.

11.14 Level of use of water access right

A person may trade a water access right free of any restriction based on:

- (a) the historical level of use of the water access right; or
- (b) an anticipated increase in the use of the water access right by the person to whom it is traded.

Subdivision B—Additional rules relating to surface water

11.15 Free trade of surface water

- (1) A person may trade a water access right:
 - (a) within a regulated system; or
 - (b) between different regulated systems; or
 - (c) within an unregulated system;free of any restriction on changing the location at which the water to which the right relates may be taken, other than a restriction that:
 - (d) is necessary because of a reason listed in subsection 11.17(1); and
 - (e) is consistent with Subdivision A.
- (2) For the purposes of this section, if the boundary between 2 unregulated systems is based solely on the border between 2 Basin States, this section applies as if the 2 unregulated systems were one unregulated system.

Note: See also section 11.23.

11.16 Trade not to be subject to volumetric limit

- (1) Without limiting the generality of section 11.14, a person may trade a water access right within a regulated system, or between regulated systems, free of any volumetric limit, unless the volumetric limit:
 - (a) is necessary because of a reason listed in subsection 11.17(1); and
 - (b) is consistent with Subdivision A.
- (2) In this section:

volumetric limit means a limit whose purpose or effect is to cap the total volume of water that may be traded out of an area.

11.17 Restrictions allowable for physical or environmental reasons

- (1) A restriction of a type referred to in sections 11.15 or 11.16 may be necessary because of:
 - (a) the existence of a physical constraint;
 - (b) the need to address hydrologic connections and water supply considerations;
 - (c) the need to avoid compromising environmental watering requirements;
 - (d) the level of hydraulic connectivity;
 - (e) a combination of any of the above.

- (2) In this section, **hydrologic connections and water supply considerations**, in relation to a water access right, means any of the following:
- (a) the amount of transmission loss that may be incurred through evaporation, seepage, or other means;
 - (b) the potential impact, as a result of the trade of a water access right, on water availability in relation to a water access right held by a third party (other than an impact arising solely because of an increase in use of the traded water access right);
 - (c) the ability to:
 - (i) deliver water from the same storage from which it is currently delivered; or
 - (ii) adjust valley and state transfer accounts to facilitate trade, for example by way of a back trade.

Note 1: See clause 3 of Schedule D to the Agreement for the meaning of **valley account**.

Note 2: See clause 5 of the *Murray-Darling Basin Agreement (Adjusting Valley Accounts and State Transfer Accounts) Protocol 2010* for the meaning of **state transfer account**.

11.18 Basin States to notify the Authority of restrictions

- (1) A Basin State must, within 30 days of the commencement of this Chapter, notify the Authority of any restriction of a kind referred to in sections 11.15 or 11.16 which is in effect at the commencement of this Chapter, and the reasons for the restriction.
- (2) If a Basin State imposes a restriction of a kind referred to in sections 11.15 or 11.16 after the commencement of this Chapter, it must notify the Authority of the restriction and the reasons for the restriction as soon as practicable after the restriction is imposed.

11.19 Basin State may request Authority to make declaration

- (1) If:
 - (a) a Basin State requests the Authority to declare that a restriction of a kind referred to in sections 11.15 or 11.16 is necessary because of a reason listed in subsection 11.17(1); and
 - (b) the Authority is satisfied that the restriction is in fact necessary because of a reason listed in subsection 11.17(1);the Authority must make the declaration.
- (2) The Authority may consult other Basin States and the ACCC before making the declaration.
- (3) The Authority must publish the declaration on its website.

11.20 Exchange rates not to be used in a regulated system

A water access entitlement must not be traded in a regulated system or between regulated systems if an exchange rate is applied to the water access entitlement as a condition of the trade.

Note: See section 11.21 for an exception to this section.

11.21 Authority may permit exchange rates in limited circumstances

- (1) Section 11.20 does not apply if:
 - (a) the exchange rate is applied as a condition of the trade of a water access entitlement from one location (**location A**) to another (**location B**); and
 - (b) the Authority has made a declaration under this section; and
 - (c) the water access entitlement is to be traded between the 2 locations at the exchange rate specified in the declaration.
- (2) The Authority may make a declaration permitting the application of a specified exchange rate to trades between 2 specified locations under this section if it is satisfied that:
 - (a) the purpose of the exchange rate is to redress the impact of previous exchange rate trades from location B to location A; and
 - (b) the total volume of water access entitlements to be traded from location A to location B using the exchange rate would not exceed the total volume of water access entitlements previously traded to location A from location B using exchange rates.
- (3) The declaration must be in writing and must be published on the Authority's website.

11.22 Restrictions on delivery of water under a tagged water access entitlement established after 21 October 2010

- (1) In regulated systems, if:
 - (a) a restriction has effect because of sections 11.15 or 11.16 on the trade of water allocations between 2 trading zones; and
 - (b) a tagged water access entitlement exists in relation to those 2 trading zones; and
 - (c) an order for water is made under the tagged water access entitlement;the order for water under the tagged water access entitlement is subject to the same restriction.
- (2) This section does not apply to a tagged water access entitlement which is established before 22 October 2010.

- (3) During the first 5 years after the commencement of this Chapter, this section does not apply to a tagged water access entitlement which is established after 22 October 2010 and before the commencement of this Chapter.
- (4) For the purposes of this section, a tagged water access entitlement is **established** once the tag has been approved by all relevant approval authorities.
- (5) In this section:
tagged water access entitlement means a water access entitlement:
 - (a) which is registered on a water register in relation to one trading zone; and
 - (b) under which the water allocation is extracted in a different trading zone (which is tagged on the register);pursuant to an arrangement for water access entitlement tagging.
- (6) If trading zones are not in place, a reference in this section to a **trading zone** is taken to be a reference to a location.

Subdivision C—Additional rules relating to groundwater

11.23 Trade within a groundwater SDL resource unit

The trade of a water access right between 2 locations within a groundwater SDL resource unit is prohibited, unless all the following conditions are met:

- (a) there is sufficient hydraulic connectivity between the 2 locations;
- (b) any resource condition limits in the SDL resource unit specified in a water resource plan will not be exceeded as a result of the trade;
- (c) either:
 - (i) water access rights in the 2 locations have substantially similar characteristics of timing, reliability and volume; or
 - (ii) measures are in place to ensure that the water access right to be traded will maintain its characteristics of timing, reliability and volume;
- (d) measures are in place to address the impact, as a result of trade, on water availability in relation to a water access right held by a third party.

Note: Section 9.41 sets out requirements for a water resource plan in relation to this section.

11.24 Trade between groundwater SDL resource units

The trade of a water access right between 2 groundwater SDL resource units is prohibited, unless all the following conditions are met:

- (a) there is sufficient hydraulic connectivity between the 2 units;
- (b) any resource condition limits in either unit specified in a water resource plan will not be exceeded as a result of the trade;
- (c) measures are in place to account for the trade;
- (d) either:
 - (i) water access rights in the 2 units have substantially similar characteristics of timing, reliability and volume; or
 - (ii) measures are in place to ensure that the water access right to be traded will maintain its characteristics of timing, reliability and volume;
- (e) measures are in place to address the impact, as a result of trade, on water availability in relation to a water access right held by a third party.

Note: Section 9.42 sets out requirements for a water resource plan in relation to this section.

11.25 Trade between groundwater and surface water

The trade of a water access right between a groundwater SDL resource unit and a surface water SDL resource unit is prohibited, unless all the following conditions are met:

- (a) there is sufficient hydraulic connectivity between the 2 units;
- (b) any resource condition limits in the groundwater SDL resource unit specified in a water resource plan will not be exceeded as a result of the trade;
- (c) measures are in place to account for the trade;
- (d) either:
 - (i) water access rights in the 2 units have substantially similar characteristics of timing, reliability and volume; or
 - (ii) measures are in place to ensure that the water access right to be traded will maintain its characteristics of timing, reliability and volume;
- (e) measures are in place to address the impact, as a result of trade, on water availability in relation to a water access right held by a third party.

Note: Section 9.43 sets out requirements for a water resource plan in relation to this section.

Subdivision D—Miscellaneous

11.26 Restrictions allowable for breaches of State water management law

Nothing in this Division is to be taken to have the effect that a person may trade a water access right free of a restriction imposed under State water management law because the person has:

- (a) committed an offence; or
- (b) failed to pay fees or charges.

Note: See section 4 of the Act for the meaning of *State water management law*.

Division 2—Trade of water delivery rights held against irrigation infrastructure operators

Note: See section 4 of the Act for the meaning of *irrigation infrastructure operator*.

11.27 No unreasonable restriction of trade of water delivery rights

- (1) An irrigation infrastructure operator must not unreasonably restrict the trade of a water delivery right between persons who own or occupy land in the area serviced by the irrigation infrastructure operator's irrigation network.
- (2) Without limiting subsection (1), an irrigation infrastructure operator is taken to restrict trade if it refuses, prevents, deters or delays trade.

11.28 When restriction of trade is unreasonable

- (1) For the purposes of section 11.27, factors to be taken into account in deciding whether a restriction is reasonable include, but are not limited to the following:
 - (a) overall capacity in the irrigation infrastructure operator's irrigation network;
 - (b) capacity in the parts of the irrigation infrastructure operator's irrigation network to which water would potentially be delivered under the traded water delivery right;
 - (c) reconfiguration or decommissioning work in the parts of the irrigation infrastructure operator's irrigation network to which water would potentially be delivered under the traded water delivery right;
 - (d) connectivity between specific parts of the irrigation infrastructure operator's irrigation network relevant to the proposed trade;

- (e) payment of fees or charges of the type described in section 91(1)(a) of the Act;
- (f) the volume of a water delivery right reasonably required to irrigate a person's property for both current and expected future water use;
- (g) the existence of necessary administrative arrangements needed to assess and give effect to a trade in water delivery rights.

(2) In this section:

reconfiguration or decommissioning work means activities whereby irrigation networks are closed, rationalised, or otherwise changed, in order to change their capacity or efficiency.

11.29 Irrigation infrastructure operator must give reasons for refusing trade of water delivery right

- (1) If an irrigation infrastructure operator refuses the trade of a water delivery right between persons who own or occupy land in the area serviced by the irrigation infrastructure operator's irrigation network, the irrigation infrastructure operator must give written reasons for its decision to both persons.
- (2) The irrigation infrastructure operator must provide the written reasons as soon as practicable, but in any case within 30 days after the refusal.

11.30 Trade must not be made conditional on water delivery right

An irrigation infrastructure operator must not require a person to hold, buy, sell, obtain, accept, terminate or vary the volume or unit share of a water delivery right:

- (a) as a condition of; or
 - (b) as the result of;
- the trade of a water access right or irrigation right.

Part 3—Information about water delivery rights and irrigation rights

Division 1—General

11.31 Object of this Part

The object of this Part is to facilitate the trade of water delivery rights and irrigation rights by making information about the rights available to the holders of those rights.

Division 2—Water delivery rights to be specified by irrigation infrastructure operators

Note: See section 4 of the Act for the meaning of *irrigation infrastructure operator*.

11.32 Obligation on irrigation infrastructure operator to specify water delivery rights and give notice

- (1) An irrigation infrastructure operator must, for each person who holds a water delivery right against that irrigation infrastructure operator, make a decision as to:
 - (a) the volume or unit share of the person's water delivery right; and
 - (b) the units applicable to the water delivery right; and
 - (c) if the water delivery right relates to a specific part of the irrigation infrastructure operator's irrigation network - the part of the irrigation network to which the water delivery right relates.

Note: The units applicable to the water delivery right may be expressed, for example, as megalitres (ML), ML/time, percentage or fraction of available capacity.

- (2) The irrigation infrastructure operator must provide written notice to the person of:
 - (a) the decision; and
 - (b) the reasons for the decision.

Note: See section 25D of the *Acts Interpretation Act 1901* for content required in a statement of reasons.

- (3) The irrigation infrastructure operator must provide written notice to the person of the terms and conditions of the contract between the irrigation infrastructure operator and the person which are applicable to the water delivery right.
- (4) The notices referred to in subsections (2) and (3) must be provided within 30 days after the commencement of this Chapter.
- (5) This section does not apply if:
 - (a) the irrigation infrastructure operator has given notice of the kinds referred to in subsections (2) and (3) before the commencement of this Chapter; and
 - (b) the notices are accurate at the commencement of this Chapter.

11.33 Obligation on irrigation infrastructure operator to give notice if water delivery right is changed

- (1) If a person's volume or unit share of water delivery right changes as a result of a decision by the irrigation infrastructure operator, the

irrigation infrastructure operator must provide written notice to the person of:

- (a) the change to the volume or unit share; and
- (b) the reasons for the change to the volume or unit share; as soon as practicable, but in any case within 30 days after the change.

Note: See section 25D of the *Acts Interpretation Act 1901* for content required in a statement of reasons.

- (2) This section does not apply if the person's volume or unit share of water delivery right changes to reflect a trade or termination by the person.

Division 3—Irrigation rights to be specified by irrigation infrastructure operators

Note: See section 4 of the Act for the meaning of *irrigation infrastructure operator*.

11.34 Obligation on irrigation infrastructure operator to specify irrigation rights and give notice

- (1) An irrigation infrastructure operator must, for each person who holds an irrigation right against that irrigation infrastructure operator, make a decision in relation to the person's entitlement to water under their irrigation right, expressed as either:
 - (a) a number of megalitres; or
 - (b) a unit share of the irrigation infrastructure operator's water access entitlement.

- (2) An irrigation infrastructure operator must provide written notice to the person of:

- (a) the decision; and
- (b) the reasons for the decision; within 30 days after the commencement of this Chapter.

Note: See section 25D of the *Acts Interpretation Act 1901* for content required in a statement of reasons.

- (3) This section does not apply if:
 - (a) an irrigation infrastructure operator has given such notice to each person who holds an irrigation right against that irrigation infrastructure operator before the commencement of this Chapter; and
 - (b) the notice is accurate at the commencement of this Chapter.

11.35 Obligation on irrigation infrastructure operator to give notice if irrigation right is changed

(1) If a person's entitlement to water under an irrigation right changes as a result of a decision by the irrigation infrastructure operator, the irrigation infrastructure operator must provide written notice to the person of:

(a) the change to the entitlement; and

(b) the reasons for the change to the entitlement;

as soon as practicable, but in any case within 30 days after the change.

Note: See section 25D of the *Acts Interpretation Act 1901* for content required in a statement of reasons.

(2) This section does not apply if the person's entitlement to water under an irrigation right changes to reflect a trade or transformation by the person.

Part 4—Approval processes for trade of water access rights

Division 1—General

11.36 Object of this Part

The object of this Part is to facilitate the trade of water access rights by making the approval processes involved in trade more open and transparent.

Division 2—Approval authority's other activities

11.37 Approval authority must disclose interest before trade occurs

(1) An approval authority must disclose to each party to a proposed trade submitted to it for approval:

(a) the nature of any legal or equitable interest it, or a related party, has in a water access right which is the subject of the proposed trade; and

(b) the nature of any commercial interest it, or a related party, has in the activities of any water market intermediary involved in the proposed trade.

(2) The disclosure must be made:

(a) as soon as practicable; and

(b) before the approval authority approves or rejects the trade.

- (3) Subsection (1) does not apply if the interest arises solely from the fact that the approval authority is an agency of a Basin State.
- (4) An approval authority is taken to have satisfied the requirements in subsections (1) and (2) if those requirements have been satisfied by a related party of the approval authority, on behalf of the approval authority.

11.38 Approval authority must disclose if it has been a party to a trade

If:

- (a) an approval authority has approved the trade of a water access right; and
- (b) the approval authority, or a related party, was a party to the trade (for example, a buyer, seller, lessee or lessor);

the approval authority must publish those facts (including details of the type of water access right and volume) on its website as soon as practicable after the trade has been approved.

11.39 Approval authority to give reasons for rejecting trade

If an approval authority has rejected a proposed trade of a water access right, the approval authority must notify the parties to the proposed trade in writing of its reasons for rejecting the trade as soon as practicable, but in any case within 30 days of the rejection.

Note: See section 25D of the *Acts Interpretation Act 1901* for content required in a statement of reasons.

Part 5—Information and reporting requirements

Division 1—General

11.40 Object of this Part

- (1) The object of this Part is to facilitate the trade of tradeable water rights by making information about the rights publicly available.
- (2) The Authority must publish information provided to it under this Part.

Division 2—Information about water access rights

11.41 Application of this Division

In this Division, *water access right* does not include water allocation.

11.42 Information about water access rights to be made available

- (1) A Basin State which holds information:

- (a) relating to a category of water access right conferred by or under a law of the State; and
 - (b) which is referred to in section 11.43;
- must provide the information to the Authority in accordance with this section.
- (2) The information must be provided in the form prescribed by the Authority from time to time.
 - (3) The information must be provided within the time periods prescribed by the Authority from time to time.
 - (4) The Authority must not require the information to be provided more than once per water accounting period.
 - (5) However, if the information is changed, the State must provide the changed information to the Authority as soon as is practicable, but in any case within 30 days of the change.

11.43 Types of information about water access rights

- (1) The information the Authority may require in the form prescribed under subsection 11.42(2), in relation to a category of water access right, is information relating to the following:
 - (a) the characteristics of the category, including:
 - (i) the water resource name;
 - (ii) the SDL resource unit;
 - (iii) the priority or reliability class;
 - (iv) the form of take;
 - (b) the total volume of the category on issue;
 - (c) the historic reliability of the category (both as a long term average and in more recent periods);
 - (d) the fees and charges payable by a holder of a water access right in the category;
 - (e) carryover arrangements;
 - (f) the timing and manner of making allocation announcements;
 - (g) how allocation levels are determined;
 - (h) the trading rules relevant to the category;
 - (i) the areas to which a water access right of the category (and any water allocation under such a right) may be traded;

- (j) the areas from which water access rights of other categories (and any water allocations under such rights) may be traded to the water resource to which the category relates.
- (2) The information referred to in paragraphs (1)(d) to (j) may be provided by way of a link to an appropriate website.

Division 3—Trading rules to be made available

11.44 Basin State must provide trading rules

- (1) A Basin State must provide a copy of rules regulating the trade of water access rights in its jurisdiction to the Authority:
 - (a) within 30 days after the commencement of this Chapter; and
 - (b) if the rules change - as soon as practicable, but in any case within 30 days of the change.
- (2) Subsection (1) does not apply to the following rules:
 - (a) the rules set out in this Chapter; or
 - (b) rules of a kind referred to in section 11.45.
- (3) The rules must be provided to a central information point determined by the Authority.
- (4) The rules must be provided in a consolidated form.
- (5) If the rules include material by way of a reference to another document:
 - (a) the rules must explain how the referenced document relates to the rules; and
 - (b) the referenced document must be publicly available online.

11.45 An irrigation infrastructure operator must provide trading rules

- (1) If a person requests a copy of the rules made by an irrigation infrastructure operator which govern the trade of tradeable water rights within, into, or out of the irrigation infrastructure operator's irrigation network, the irrigation infrastructure operator must provide a copy of the rules to the person within a reasonable time.
- (2) If the irrigation infrastructure operator has a website, it must also publish the rules on the website:
 - (a) within 7 days after the commencement of this Chapter; and
 - (b) if the rules change - as soon as practicable, but in any case within 30 days of the change.

- (3) If the irrigation infrastructure operator is one to whom rule 15 of the *Water Charge (Infrastructure) Rules 2010* applies, it must also provide a copy of the rules to the central information point referred to in subsection 11.44(3):

- (a) within 7 days after the commencement of this Chapter; and
- (b) if the rules change - as soon as practicable, but in any case within 30 days of the change.

Note: Rule 15(1) of the *Water Charge (Infrastructure) Rules 2010* requires an infrastructure operator that meets the criteria in rule 15(2) to publish its schedule of fees in a prescribed manner.

- (4) The rules must be provided in a consolidated form.

- (5) If the rules include material by way of a reference to another document:

- (a) the rules must explain how the referenced document relates to the rules; and
- (b) the referenced document must be publicly available online.

Note: See section 4 of the Act for the meaning of *irrigation infrastructure operator*.

Division 4—Trading prices to be made available

11.46 Price to be reported as a condition of approval of trade

- (1) If the trade of a water access right requires the approval of an approval authority, the seller of a water access right must notify the approval authority in writing of the price agreed for the trade.
- (2) If the trade of a water access right does not require the approval of an approval authority but does require registration, the seller must notify the registration authority of the price agreed for the trade.
- (3) The notice must be given either at, or before, the time the registration is sought.

Division 5—Allocation and policy information to be made available

11.47 Meaning of *water announcements* and *material effect*

- (1) In this Division, *water announcement* means a public announcement of either of the following kinds:
 - (a) an allocation announcement; or

- (b) an announcement of a policy decision that would have a material effect on the price or value of water access rights, including but not limited to:
 - (i) changes to carryover conditions; or
 - (ii) changes in the ability to trade between trading zones; or
 - (iii) amendments to previous announcements.
- (2) An announcement of a policy decision is taken to have a **material effect** on the price or value of water access rights if the announcement would, or would be reasonably likely to, influence a person in deciding whether or not to acquire or dispose of such rights.

11.48 Water announcements must be made generally available

- (1) A person who makes a water announcement must ensure that it is made in such a manner as to be generally available.
- (2) For the purposes of this section and section 11.49, information is **generally available** if it has been published in a manner that would, or would be likely to, bring it to the attention of interested members of the public.

11.49 Person not to trade if aware of water announcement before it is made generally available

A person who is aware of a proposed water announcement, or is aware of a water announcement before it is made generally available, must not trade any water access right that is:

- (a) the subject of the water announcement; or
- (b) whose price or value would be materially affected by the water announcement;

until the water announcement is made generally available.

Chapter 12—Program for monitoring and evaluating the effectiveness of the Basin Plan

Part 1—Preliminary

12.01 Simplified outline

- (1) This section sets out a simplified outline of this Chapter.
- (2) This Chapter sets out the program for monitoring and evaluating the effectiveness of the Basin Plan (item 13 of the table in subsection 22(1) of the Act), which consists of:
 - (a) the principles to be applied in monitoring and evaluating the effectiveness of the Basin Plan (Part 2); and
 - (b) the following framework to be used to monitor and evaluate the effectiveness of the Basin Plan:
 - (i) outcomes against which the effectiveness of the Basin Plan will be measured (Part 3);
 - (ii) reporting requirements relating to those outcomes (Part 4);
 - (iii) review processes for the environmental watering plan and the water quality targets in the water quality and salinity management plan (Part 5);
 - (iv) the process for evaluating the Basin Plan, including the key evaluation questions that will inform evaluations (Part 6).

12.02 Purpose of this Chapter

The purpose of this Chapter is to:

- (a) provide a framework for consistent reporting; and
- (b) inform reviews of the Basin Plan and its elements; and
- (c) provide the principles and framework to evaluate the effectiveness of the Basin Plan against the objectives set out in Chapters 5, 7 and 8, which are represented by the outcomes listed in Schedule 10.

Part 2—Principles to be applied

12.03 Principles to be applied in monitoring and evaluating the effectiveness of the Basin Plan

- (1) The principles in this section must be applied by:
 - (a) the Authority, when monitoring and evaluating the effectiveness of the Basin Plan or conducting a review under Part 5; and
 - (b) the Basin States, the Commonwealth Environmental Water Holder and the Department, when monitoring and evaluating for the purpose of meeting the reporting requirements in Part 4.

Principle 1

- (2) Decisions should be made through an ongoing collaborative process between the Basin States and the Commonwealth, through their agencies. The collaborative process may result in agreements and guidelines that the Authority may publish and the Basin States and the Commonwealth may have reference to.

Principle 2

- (3) Monitoring and evaluation should be undertaken within the conceptual framework of program logic.

Note: Program logic is a mechanism that helps to determine when and what to evaluate so that resources can be used effectively and efficiently: see the Australian Government's *NRM MERI Framework*.

Principle 3

- (4) Basin States and the Commonwealth should report against outcomes in a manner which reflects the degree to which they are responsible for that outcome, and in a manner that avoids duplication.

Principle 4

- (5) Best available scientific knowledge, evidence and analysis should be used where practicable to ensure credibility, transparency and usefulness of monitoring and evaluation findings.

Principle 5

- (6) Basin States and the Commonwealth should collaborate on the technical and operational elements of monitoring and evaluation in order to build engagement and ownership.

Principle 6

- (7) A risk-based approach should be used for investment in monitoring and evaluation.

Principle 7

- (8) Monitoring and evaluation findings should enable decision-makers to use adaptive management.

Principle 8

- (9) Monitoring, evaluation and reporting should be timely, efficient, cost-effective, consistent and should supply the information needed for evaluation. Reporting requirements should build on existing programs that are consistent with these principles and should be aligned with other reporting requirements where possible.

Part 3—Basin Plan outcomes

12.04 Outcomes for the Basin Plan

- (1) The outcomes against which the effectiveness of the Basin Plan is to be measured are set out in Schedule 10.
- (2) The outcomes relate to:
- (a) the Basin Plan as a whole; and
 - (b) each of the following elements of the Basin Plan:
 - (i) the environmental watering plan;
 - (ii) the water quality and salinity management plan;
 - (iii) the water trading rules;
 - (iv) water resource planning.

Part 4—Reporting requirements

12.05 Reporting requirements for Basin States, the Department etc

- (1) For each Basin Plan outcome listed in Schedule 10, and for each year indicated for that outcome, the person listed as the reporter for the outcome must produce a report on the extent to which that outcome has been achieved, as at 1 July of that year.
- (2) The report must be produced and (if not produced by the Authority) given to the Authority by 31 October of the year.
- (3) The Authority must publish a copy of each report on its website.

12.06 Agreements in relation to reporting requirements

- (1) The Authority may enter into an agreement with a Basin State, the Commonwealth Environmental Water Holder or the Department, in relation to meeting the reporting requirements in section 12.05.

- (2) Without limiting subsection (1), an agreement may:
 - (a) exempt a Basin State, the Commonwealth Environmental Water Holder or the Department from reporting on an outcome to the extent that it is not relevant to that person; or
 - (b) if more than one person is listed as the reporter for an outcome, permit a joint report to be produced; or
 - (c) allow a person to contribute information to a report produced by another.
- (3) The Authority must consult with the Basin States and Commonwealth agencies to ensure that the agreements remove unnecessary duplication of effort.

12.07 Reporting requirements for the Director of Meteorology and ABARES

- (1) The Authority may enter into an agreement with the Director of Meteorology in relation to any information held by the Bureau that is:
 - (a) water information relating to Basin water resources; or
 - (b) information that is relevant to any of the outcomes listed in Schedule 10.

Note: See section 4 of the Act for the meaning of ***water information***.

- (2) The Authority may enter into an agreement with ABARES in relation to information held by ABARES that is relevant to any of the outcomes listed in Schedule 10.
- (3) The Director of Meteorology and ABARES must provide the information to the Authority in accordance with the agreement.

12.08 Guidelines for reporting requirements

The Authority may publish guidelines in relation to the reporting requirements in this Part, and the Basin States may have regard to the guidelines.

12.09 Personal information not required

Nothing in this Chapter requires a person to disclose personal information.

Note: See section 6 of the *Privacy Act 1988* for the definition of ***personal information***.

Part 5—Reviews of water quality targets and environmental watering plan

12.10 Purpose of reviews

The purpose of the reviews required by this Part is to assess the effectiveness of:

- (a) the water quality targets in the water quality and salinity management plan; and
- (b) the environmental watering plan;

in contributing to the achievement of the objectives set out in Chapters 7 and 8.

12.11 Reviews of the water quality and salinity management plan targets

- (1) The Authority must conduct a review of the water quality targets in the water quality and salinity management plan every 5 years after the commencement of the Basin Plan.

Note: The water quality targets are set out in Part 4 of Chapter 8.

- (2) The first review must include a consideration of:

- (a) the appropriateness of the existing salinity operational target values and sites; and
- (b) whether it is necessary to increase the number of target sites in order to improve the management of salinity;

having regard to Schedule B of the Agreement.

- (3) The Authority may request from a Basin State, the Commonwealth Environmental Water Holder, the Department, the Director of Meteorology and ABARES any information that it considers necessary to conduct the review, in addition to the information required by Part 4.

Note: See also section 238 of the Act.

- (4) The review must be undertaken in consultation with the Basin States.
- (5) The Authority must prepare a written report of the review.
- (6) The Authority must publish a copy of the report on its website.

12.12 Reviews of the environmental watering plan

- (1) The Authority must conduct a review of the environmental watering plan every 5 years after the commencement of the Basin Plan.

Note: A review will include a review of the targets by which to measure progress towards achieving the objectives in the environmental watering plan (Part 3 of Chapter 7).

- (2) The Authority may request from a Basin State, the Commonwealth Environmental Water Holder, the Department, the Director of Meteorology and ABARES any information that it considers necessary to conduct the review, in addition to the information required by Part 4.

Note: See also section 238 of the Act.

- (3) The review must be undertaken in consultation with the Basin States, the Commonwealth Environmental Water Holder and other relevant Commonwealth agencies.
- (4) The Authority must prepare a written report of the review.
- (5) The Authority must publish a copy of the report on its website.

Part 6—Evaluation of Basin Plan

12.13 Authority's use of information to evaluate Basin Plan

- (1) The Authority must evaluate the effectiveness of the Basin Plan in achieving the outcomes listed in Schedule 10, for the purpose of:
 - (a) annual reports on the effectiveness of the Basin Plan, as required by paragraph 214(2)(a) of the Act;
 - (b) advising on the impacts of the Basin Plan after the first 5 years, as required by section 49A of the Act;
 - (c) 10 yearly reviews of the Basin Plan, as required by section 50 of the Act.

Note: For the review of SDLs in 2015, see section 6.07.

- (2) In making an evaluation, the Authority must have regard to:
 - (a) information provided by the Basin States, the Commonwealth Environmental Water Holder and the Department under section 12.05; and
 - (b) information provided by the Director of Meteorology and ABARES under section 12.07; and
 - (c) the key evaluation questions in section 12.14; and
 - (d) any other relevant information it holds.
- (3) In making an evaluation, the Authority must provide the Basin States, the Department, the Commonwealth Environmental Water Holder, the Director of Meteorology, and ABARES with an opportunity to comment on the evaluation before the evaluation is publicly released.

12.14 Key evaluation questions

The key questions that the Authority must ask when making an evaluation referred to in section 12.13 are the following:

- (a) to what extent has the intended purpose of the Basin Plan set out in section 20 of the Act been achieved?
- (b) to what extent have the objectives, targets and outcomes set out in the Basin Plan been achieved?
- (c) how has the Basin Plan contributed to changes to the environmental, social and economic conditions in the Murray-Darling Basin?
- (d) what, if any, unanticipated outcomes have resulted from the implementation of the Basin Plan?
- (e) how could the effectiveness of the Basin Plan be improved?
- (f) to what extent were the actions required by the Basin Plan suited to meeting the objectives of the Basin Plan?

12.15 Evaluations to inform changes to Basin Plan

In proposing any amendments to the Basin Plan, the Authority must have regard to any evaluations of the effectiveness of the Basin Plan made under this Chapter and any resulting recommendations.

Note: Subdivision F of Division 1 of Part 2 of the Act sets out the process for amending the Basin Plan.

Schedule 1—Basin water resources and the context for their use

Note 1: See section 2.01.

Note 2: This description presents a range of information across a number of themes. With no consistent reference period available the most recent available data for each theme has generally been used. As a result a comparison across themes is difficult.

Size and extent of water resources in the Murray-Darling Basin

1. The Murray-Darling Basin is defined by the catchment areas of the Murray and Darling rivers and their many tributaries. Comprising 23 main river valleys, the Basin extends over 1 million km² of south-eastern Australia, covering three-quarters of New South Wales, more than half of Victoria, significant portions of Queensland and South Australia, and all of the Australian Capital Territory.
2. The Basin's river systems range from a largely unregulated system in the north, where many of the rivers and streams are ephemeral, to more highly regulated systems in the south. To the east and south its limits are the highlands of the Great Dividing Range, while in the north, west and south-west the boundaries are much less distinct. The great proportion of the Basin is made up of extensive plains and low undulating areas, mostly lower than 200 m above sea level.
3. The River Murray lies in the south of the Murray-Darling Basin. From an altitude of 1,430 m in the Snowy Mountains, the river flows north-west, forming the New South Wales – Victorian border and meeting with the Mitta Mitta, Kiewa, Ovens, Goulburn, Campaspe, Loddon, Avoca, Edward–Wakool, Murrumbidgee and Darling rivers. It then continues west into South Australia. Near Morgan, it turns south towards Lake Alexandrina and the mouth where the Murray meets the Southern Ocean.
4. The Darling River starts in the north of the Murray-Darling Basin between Brewarrina and Bourke at the confluence of the Culgoa and Barwon rivers, which begin their flows in southern Queensland and northern New South Wales west of the Great Dividing Range. The Darling runs south to south-west in far west New South Wales, joining the River Murray on the New South Wales – Victorian border at Wentworth, New South Wales. The Darling is the third largest river in Australia but has the longest system of tributaries, including the Balonne, Macintyre, Dumaresq, Gwydir, Namoi, Castlereagh, Macquarie and Severn rivers. The Bogan, Warrego and Paroo rivers join the Darling near or below Bourke in New South Wales.
5. The Murray-Darling Basin has large groundwater resources in three main aquifer types: alluvial, porous rock and fractured rock. The alluvial and porous rocks of the sedimentary basins cover the largest area. The storage in these aquifers is significant, but only a small percentage is accessible and water quality is often poor. While the Great Artesian Basin is a major groundwater resource under the Basin, its management is not included in the Basin Plan.

6. The natural environment of the Murray-Darling Basin includes vast floodplains and wetlands that support biodiversity of national and international significance. The Basin has one World Heritage site (the Willandra Lakes Region), 16 wetlands listed under the Convention on Wetlands of International Importance (the Ramsar Convention), and more than 200 wetlands listed in *A Directory of Important Wetlands in Australia* (Environment Australia, 2001; CSIRO, 2008).

MDB Baseline diversions (GL/y)			
SDL Resource Unit	Watercourse diversions	Interceptions	Total baseline diversions
Southern connected system			
Ovens	25	58	83
Goulburn	1580	109	1689
Broken	13	43	56
Loddon	89	90	179
Campaspe	113	40	153
Murrumbidgee	2000	501	2501
ACT	40.5	12	52.5
Kiewa	11	14	25
NSW Murray	1708	104	1812
Victorian Murray	1662	45	1707
SA Murray	665		665
SA Non Prescribed Areas		3.5	3.5
Lower Darling	55	5.5	60.5
Eastern Mt Lofty Ranges	28.3		28.3
Marne-Saunders	2.9		2.9
Total	7993	1025	9017
Southern disconnected system			
Lachlan	302	316	618
Wimmera-Mallee	66	62	129
Total	369	378	747
Northern connected system			
Paroo	0.2	9.7	9.9
Warrego	45	83	128
Condamine-Balonne	713	265	978
Nebine	6	25	31
Moonie	33	51	84
Intersecting streams	3	111	114
Gwydir	325	125	450
Namoi	343	165	508
Macquarie-Castlereagh	424	310	734

Queensland Borders Rivers	242	78	320
NSW Border Rivers	208	95	303
Barwon-Darling Watercourse	198		198
Total	2541	1318	3858
MDB Total	10903	2720	13623

Note 1: For the Eastern Mount Lofty Ranges and Marne-Saunders SDL resource units, watercourse diversion figures include interceptions.

Note 2: Some estimates have been subject to rounding.

Connectivity

7. Environmental connectivity across the Murray-Darling Basin provides links between water-dependent ecosystems that allow migration, colonisation and reproduction of species. Connections upstream and downstream to the ocean, and between a river and its floodplains and wetlands, are important for transferring energy and nutrients, and in the life cycles of many plants and animals.

8. Hydrologic connectivity, or the ability for water sources to sufficiently connect to allow the movement of water, is highly variable between the regions of the Murray-Darling Basin and between wet and dry periods. For example, the Paroo, Lachlan and Wimmera rivers terminate in floodplain wetlands, and only in very large floods can contribute any flow to the Darling, Murrumbidgee or Murray rivers respectively (CSIRO, 2008). The Murrumbidgee and Goulburn-Broken generally provide more regular flows to the Murray.

9. The rate and volume of flow between water resources varies across the Murray-Darling Basin. During very wet periods, water connects laterally from river channels to wide floodplains. These floodplains are typically very flat in their lower reaches, resulting in slow travel times and high volumes of seepage and evaporation, particularly over summer and especially in the northern parts of the Basin.

10. Surface water and groundwater systems are not separate resources but are components of one system. Where the connection is strong, groundwater extraction may directly affect surface water stream flow. Similarly, surface water extraction and management regimes may affect the availability of groundwater.

11. The capacity of river channels and infrastructure can, at peak times, constrain the delivery of consumptive water, as they create limits to the volume of water that can move through the river system.

Variability

12. Climatic conditions in the Murray-Darling Basin vary considerably from region to region and year to year. There is a strong east-west rainfall gradient and a strong north-west to south-east temperature gradient. Rainfall is summer dominant in the north and winter dominant in the south (CSIRO, 2008). Climate change is expected

to increase this variability and result in more frequent extreme weather events, including more severe droughts and floods.

13. Water run-off into the river system of the Murray-Darling Basin is very low at less than 7% of total annual rainfall. The Basin also experiences considerable variation in annual inflow to its rivers – over the past 114 years inflows have ranged from a high of around 117,907 GL in 1956 to a low of around 6,740 GL in 2006 (MDBA, 2010a, 2010b).
14. The natural variability of flows is important to Murray-Darling Basin ecology. As a result of the Basin's highly variable climate and rainfall, many water-dependent ecosystems and functions need frequent and variable flows. Many water-dependent ecosystems also require dry periods, reflecting the Basin's unpredictable and highly variable climate. Flows and freshes are required to sustain key ecosystem functions, while overbank flows support the Basin's key environmental floodplain assets.

Condition of the Basin's water resources

15. The condition of the Basin's surface water resources varies depending on a range of factors including: location, climate and connectivity, the level of development, management arrangements, local activities, and an area's relationship with other parts of the system.
16. Changes to the flow regime of the Murray-Darling Basin's rivers have affected flood- and flow-dependent species and ecosystems (Boulton, 1999; Kingsford, 2000; Kingsford & Thomas, 2004). The National Land & Water Resources Audit, 2000 Assessment of River Condition indicated that the ecological health of Basin rivers was poorer than that required for ecological sustainability (Norris et al., 2001).
17. The long term average annual flow reaching the Murray Mouth from the 1900s to the 1990s was around 12,000 GL (Paton, 2010), noting that over the more recent drought period from 2000 to 2008 flows to the Mouth averaged just 1006 GL (Paton 2010). Keeping the Mouth open is important for the exporting of salt and nutrients from the Basin and for maintaining the health of the Coorong.
18. Changing flow patterns and degraded riparian zones increase bank erosion, turbidity and sedimentation, filling pools with sediment and smothering habitat. Changes to seasonal flows have affected fish breeding, and constant low flows reduce ecosystem productivity by removing the high-flow and low-flow cues that trigger and sustain aquatic life cycles (Poff et al., 1997; Humphries, Serafini & King, 2002; MDBC, 2003b).
19. The Sustainable Rivers Audit provides a comprehensive assessment of the ecosystem health of 23 river valleys in the Murray-Darling Basin. On the basis of the first assessment, the Paroo valley in the north-west of the Basin was the only region to achieve a health rating of 'good'. The Condamine and Border Rivers valleys were rated as being in 'moderate health', and all others were rated 'poor' or 'very poor',

with the lowest ranked being the Murrumbidgee and Goulburn valleys (Davies et al., 2008).

20. The Murray-Darling Basin supports many plants, animals and ecosystems that are nationally and internationally significant. In the past 50 years, populations of native fish species in the Basin have suffered serious declines in distribution and abundance. These declines reflect the poor state of the river system and the impacts of human use. Up to half of the Basin's native fish species are considered to be either threatened or of conservation significance (Lintermans, 2007). Many species of waterbirds breed in large numbers only during flooding of wetlands and lakes. The large wetlands on the lower reaches of the Condamine–Balonne, the Gwydir, the Macquarie, the Lachlan and the Murrumbidgee rivers are among the most important sites of their type in Australia for such breeding events (Kingsford & Johnson, 1998; Kingsford, Curtin & Porter, 1999; Kingsford & Thomas, 2004; Kingsford & Auld, 2005). However, assessments indicate that approximately 90% of the Gwydir Wetlands, 75% of the wetlands of the Lower Murrumbidgee floodplain, and 40–50% of the Macquarie Marshes have been lost since European settlement (Keyte, 1994; Kingsford & Thomas, 1995, 2004). The breeding of colonially nesting waterbirds in the Barmah–Millewa Forest on the Murray (Leslie, 2001), the number of waterbirds and waterbird nests, and the frequency of waterbird breeding in the Macquarie Marshes have been reduced relative to without-development conditions (Kingsford & Thomas, 1995; Kingsford & Johnson, 1998).
21. At the end of the system, the Coorong and Lower Lakes region is listed under the Ramsar convention for support of 49 species of birds at a critical stage in their life cycles, and/or providing refuge for them during adverse conditions. This includes 25 migratory waterbird birds listed under the Japan–Australia and China–Australia Migratory Bird Agreements (JAMBA and CAMBA respectively). The Coorong and Lower Lakes region also supports many resident species that breed in the site or rely on it for refuge during times of drought (Phillips & Muller, 2006).
22. Modifications to the flow regime of the River Murray have resulted in a significant change to the ecological character of the region since its listing as a Ramsar wetland in 1985. Over the past decade the average annual stream flow at the Murray Mouth has been particularly low. This has resulted in the siltation of the Murray Mouth channel and the extreme hypersalinisation of the South Lagoon, where salinity was recently more than four times that of seawater. Changes to the water regime of the River Murray have also been linked to a decline in abundance of a number of fish and waterbird species in the Coorong (Brookes et al., 2009).
23. The Sustainable Rivers Audit showed macroinvertebrate populations had a lower diversity than expected, especially in the Campaspe, Castlereagh, Wimmera and Avoca valleys. More than two-thirds of sites were rated as being in moderate to good condition in terms of long-term hydrologic regimes (i.e. not including the recent dry period). Sites that were rated as being in poor hydrologic condition are in the

lowland reaches of the major river systems and on reaches affected by river regulation and extraction for irrigation (Davies et al., 2008).

24. The Sustainable Rivers Audit also reported that the condition of the native fish population in the Basin was at best moderate (Davies et al. 2008). Native fish populations have declined and their resistance to invasion by alien species has been lowered (Gehrke et al., 1995; Gehrke, 2001). It is estimated that the fish communities in the Basin are at about 10% of their levels before European settlement (Lintermans, 2007). Other changes cited by Lintermans include a 93% and 74% decline between 1940 and 1990 in the numbers of silver perch and golden perch, respectively, passing through Euston Weir; a decline in the commercial catch of Murray cod in New South Wales from approximately 74 t/y in the late 1940s to 9.5 t/y in the early 1990s; and the presence of 11 alien species, which comprise 80–90% of fish biomass at many sites in several rivers (Lintermans, 2007).
25. While no fish species has become extinct in the Murray-Darling Basin localised extinctions have occurred. Twenty-six of the 46 native species in the Basin are recognised as either rare or threatened on state, territory or national listings. A number of Basin fish communities are also listed as threatened. In New South Wales, three aquatic ecological communities are listed as endangered (the lower Murray, lower Darling, and lower Lachlan), and in Victoria the Lowland Riverine Fish Community of the Southern Murray-Darling (Lintermans, 2007).
26. The health of riparian and wetland vegetation, which plays a key part in riverine ecology, has declined. Many areas remain under significant pressure from the combined effects of human activity and the recent drought. For example, in 2003, 80% of remaining river red gums on the River Murray floodplain in South Australia were stressed to some degree, and 20–30% were severely stressed. In the Macquarie Marshes, over half the river red gum forest and woodland has more than 40% dead canopy, and over 40% has more than 80% dead canopy (Bowen & Simpson, 2009).
27. The beneficial uses of Basin water resources, such as for irrigation, drinking, recreation and watering aquatic ecosystems, depend on suitable water quality. Threats to water quality include salinity, algal toxins, high nutrient and suspended sediment loads, acidification, cold-water pollution, toxicants, low pH and low dissolved oxygen levels.
28. Recent low levels of flow have led to significant water quality problems (e.g. blue-green algal blooms). The Murray-Darling Basin naturally contains large quantities of salt, but dams, irrigation and water consumption have reduced flushing flows and increased its accumulation. Salinity is generally managed and controlled as a result of programs initiated since 1988, but a need for continued management of salt in the Basin remains. Toxic blue-green algal blooms and blackwater events occur periodically. Algal blooms occur most often when water is still or slow moving, nutrient levels (particularly phosphorus and nitrogen) in the water are high, and

weather is steady and warm. Blackwater events (elevated levels of dissolved organic carbon) naturally occur in the Basin’s rivers. Leaf litter and other organic matter collects on floodplains during dry periods, and when rains arrive this matter is washed into rivers where it decays, depleting the oxygen in the water.

29. While these are natural events, they have been increasing in intensity due to the changes in flow patterns in many rivers, particularly in the south. Medium-to-large floods, which normally would flush through floodplains quite regularly, are now contained and regulated.
30. The quality of groundwater resources in the Murray-Darling Basin varies naturally from fresh through brackish to highly saline (in some areas exceeding the salinity of sea water). Most of the Basin’s groundwater resources are relatively unchanged from without-development conditions. However, significant changes have occurred in groundwater resources in some locations, including where large aquifers in areas of intensive irrigation development have been heavily used over the past 30 to 40 years. The condition of groundwater resources in the Basin, compared with their condition before land clearing and development for consumptive purposes, relates to the decline in groundwater levels (and pressure in confined systems) and the raising of groundwater levels because of increased recharge caused by local irrigation drainage or greater rainfall infiltration following land clearing.

Users of Basin water resources and the uses to which the resources are put

31. The water resources of the Murray-Darling Basin not only support the Basin’s freshwater ecosystems but also play an important role in delivering water for industry, human consumption and environmental management. Approximately 42% of the annual surface water run-off to the Murray-Darling Basin is diverted for social and economic consumption or environmental management while 58% currently remains in the environment.

MDB average long-term annual inflow and water use	
Surface water	GL
Inflows	
Inflows to the Basin	31,599
Transfer into the Basin	954
Total	32,553
Water Use	
Watercourse diversions	10,903
Interceptions	2,720
Water used by the environment & losses	13,788
Outflows from the Basin	5,142
Total	32,553

Source: MDBA unpublished data

Schedule 1— Basin water resources and the context for their use

Note 1: The diversions shown in this table are based on MDBA estimates and correspond to those outlined in Schedule 2.

Note 2: The total inflows into the Basin shown in this table are the Authority's best estimate of surface water runoff generated across the Basin, and are based on modelled inflows adjusted where necessary to incorporate the effects of interception activities. This differs from other methods of assessing total Basin water availability such as inflow data based on the CSIRO Murray–Darling Basin Sustainable Yields Project which modelled flows at the point of maximum flow under without-development conditions.

Note 3: Some estimates have been subject to rounding.

32. In the northern system there are highly variable rivers, small public storages (the total volume of private storages is often bigger), floodplain harvesting storages and only a few small communal irrigation schemes.
33. In the southern river systems, water is highly regulated, with large public storages, many small farms and large communal irrigation schemes where channels and pipelines allow water to be moved and traded.
34. Water may also be moved into or out of the Murray–Darling Basin; the major transfers into the Basin are from the Snowy River catchment via the Snowy Mountains Hydro-electric Scheme, and from the Glenelg River to the Wimmera system. Transfers out of the Basin include water diversions from the River Murray to supply Adelaide and most of regional South Australia, water diversions from the Macquarie catchment to supply Lithgow and the Blue Mountains in New South Wales, and water from the Goulburn catchment to supply southern Victoria.
35. The Basin water resource provides consumptive water for critical human needs, irrigation, and stock and domestic use; it allows communities and industry to function and ultimately provides water to over 2 million Basin residents and to 3.3 million Australians in total.
36. Water is made available to the environment either naturally or through the delivery of environmental flows. The delivery of consumptive water and environmental flows is managed through the decisions and operations of environmental and river managers, river operators and irrigation infrastructure operators.
37. Access to consumptive water is governed by water access rights and entitlements.
38. The actual consumptive water use in any given year will vary from the entitlement, based on the annual climatic conditions and existing water availability. Entitlements-based water is made available to users each year through the state-based allocations system. Actual water use, or consumption, in the economy for the 2008–09 year, a drought year, was estimated by the ABS to be 6,152 GL.

Schedule 1—Basin water resources and the context for their use

Murray-Darling Basin water use 2008–09					
	Self-extracted	Distributed	Reuse	Instream use	Consumption
	ML	ML	ML	ML	ML
Agriculture, forestry and fishing					
Agriculture	1,590,175	2,211,827	40,897	0	3,842,899
Aquaculture	1,162	1,041	19	1,130	1,091
Forestry and logging	26	1,209	0	0	1,235
Fishing, hunting and trapping	195	107	0	0	302
Agriculture, forestry and fishing support services	1,179	32,992	0	0	34,171
Mining	36,593	3,294		12,027	30,455
Manufacturing	33,777	68,233			101,923
Electricity, gas, water and waste services					
Electricity and gas supply	9,170,193	14,999	0	9,169,398	847
Water supply, sewerage and drainage services	4,504,159	1,750,450	42,814	141,169	1,652,095
Waste collection, treatment and disposal services	45	21	0	0	66
Other industries	19,176	257,315	14,792	0	291,283
Household	10,141	179,514	0	0	189,654
Total	15,369,643	4,524,427	106,352	9,323,724	6,152,271

Source: ABS Water Account Australia, 2008–09

Note: The majority of water use in electricity and gas supply relates to generation of hydro-electric power.

Agricultural use

39. Basin water resources support dryland and irrigated agriculture across the Murray-Darling Basin. Water can be used directly through the irrigation of crop and pastures, such as cotton, rice, dairy pastures and horticulture or less directly in dryland agriculture for the watering of stock and in maintaining farming operations. The water resources of the Basin also provide support to those who live and work in dryland and irrigated farming communities.
40. Agricultural production in the Murray-Darling Basin accounts for 40% of Australia's agricultural production and is estimated to be worth 15 billion dollars annually, around 5 billion dollars of this production is produced with the assistance of irrigation. Of the 60,000 agricultural businesses operating in the Basin in 2005–06 almost one-third (18,600) applied water in some form as part of their production processes (ABS, 2006).
41. In 2006, agriculture's share of Gross Regional Product for the Murray-Darling Basin was estimated at 15% (9.4% from dryland and 5.6% from irrigated activities) (Wittwer, 2010).

Schedule 1— Basin water resources and the context for their use

Selected agricultural statistics by region (2005–06)				
Sustainable Yields Region	Agricultural businesses irrigating	Gross Value of Irrigated Production (GVIAP)	Volume of water applied	Ratio of GVIAP to volume of water applied
	no.	\$m	GL	\$/ML
Barwon–Darling	88	76	224	338
Border Rivers	566	350	358	980
Campaspe	445	93	112	828
Condamine–Balonne	1,068	399	347	1,150
Eastern Mount Lofty Ranges	691	168	73	2,308
Goulburn–Broken	2,396	712	630	1,131
Gwydir	146	171	305	559
Lachlan	627	165	222	744
Loddon–Avoca	1,215	275	359	767
Macquarie–Castlereagh	703	176	198	891
Moonie	np	35	56	629
Murray	6,883	1,799	2,287	787
Murrumbidgee	2,336	727	1,751	415
Namoi	691	231	383	603
Ovens	505	85	31	2,715
Paroo	np	2	1	1,729
Warrego	20	9	8	1,118
Wimmera	np	12	6	2,045
Murray-Darling Basin	18,634	5,522	7,370	749

Source: Australian Bureau of Statistics , Agricultural Census, 2005–06, unpublished data.

Agricultural commodities (2005–06)			
	Gross value of Agricultural Production	Gross value of Agricultural Irrigated Production	Water use
	\$m	\$m	GL
Pasture and hay for livestock	6,298	1,798	2,671
Rice	274	274	1,252
Cereals for grain and seed	3,436	180	624
Cotton	861	798	1,574
Grapes	777	721	515
Fruit and nuts	1,111	1,011	413
Vegetables for human consumption and seed	602	555	152
Other agriculture	1632	186	169
Total	14,991	5,522	7,370

Source: Australian Bureau of Statistics, Agricultural Census, 2005–06, unpublished data.

Industry use

42. Compared to agriculture other industries make relatively small use of the Basin water resources. Notwithstanding this, many industry and service providers rely on and use Basin water resources to some extent.
43. The processing of agricultural products, food manufacturing and the mining industry are key direct uses of Basin water resources. Importantly this industry use extends outside the Basin to those areas that receive transfers of Basin water resources, notably South Australia.
44. The freight movement of agricultural and industrial products produced with the assistance of Basin water, to processor, to market or to port for export plays an important role in the economic viability of many communities inside and outside of the Basin.

Ecosystem use

45. Water that is provided to freshwater ecosystems — rivers, lakes, floodplains, wetlands and estuaries — not only supports the plants, animals and landscapes in these ecosystems, but also provides a range of environmental services that are essential to human health and wellbeing. These ecosystem services can include water supply and treatment, pollution abatement, pollination, carbon sequestration and pest management.
46. There are some 30,000 wetlands in the Murray-Darling Basin — most are on private land. Sixteen Murray-Darling Basin wetlands are listed as internationally important under the Ramsar Convention and around 220 are listed in *A directory of important wetlands in Australia* (CSIRO, 2008).
47. The Murray-Darling Basin wetlands listed in *A directory of important wetlands in Australia* cover an area of around 2,500,000 ha (SEWPAC, 2001). Ramsar-listed wetlands in the Basin cover an area of 636,500 ha (SEWPAC, 2010).
48. The approximate total Murray-Darling floodplain area is 6,064,000 ha based on maximum inundation extents (Overton et al., 2009). Inundation areas were mapped for the periods 1984–93 and 2000–09. 4,545,785 ha or 76% of total floodplain area was inundated during the period 1984–93. 1,517,753 or 25% of total floodplain area was inundated during the period 2000–09.
49. More than 60 fish species are known from the Murray-Darling Basin, including a complex of species (*Hypseleotris* spp.) awaiting formal description. The total also includes 10 species that are alien, having originated outside Australia, and 7 marine or estuarine species that enter fresh water (Davies et al., 2008).

50. Sustainable Rivers Audit fish sampling at 487 sites during 2004–07 yielded more than 60,600 individuals (57% native, 43% alien) in 38 species (28 native, 10 alien), weighing more than 4 tonnes (32% native, 68% alien) (Davies et al., 2008).
51. Sustainable Rivers Audit macroinvertebrate samples taken from 773 sites included over 209,100 specimens of macroinvertebrates in 124 families. They included leeches and worms, shrimps, snails, beetles, bugs and the young stages of dragonflies, midges and other insects (Davies et al., 2008).
52. Wetlands in the Murray-Darling Basin are very significant for waterbirds on a continental scale with 98 species recorded during a Basin-wide survey (Scott, 1997). This includes waterfowl (ducks, geese, swans), grebes, pelicans, cormorants, crakes, rails, ibis, egrets, herons and migratory waders. Thirty-four waterbird species have a large component of their breeding habitat in the wetlands of the Murray-Darling Basin.
53. In recent years, water holdings managed by the Commonwealth Environmental Water Holder and through programs such as The Living Murray have played a role in using the Basin's water resources to deliver water to environmental sites. As well as preserving these sites, environmental watering has provided a range of broader ecological benefits such as improved health of river red gums, and better habitat for birds and fish. Environmental water was of particular value in maintaining environmental assets towards the end of the extreme drought period.

Community use

54. The Murray-Darling Basin is home to over 2 million people (ABS, 2009) who rely directly on water resources for household use including drinking, food preparation, bathing, washing and domestic outdoor purposes such as gardening.
55. A further 1.3 million people outside the Basin rely, either fully or partially, on Basin water for similar purposes (ABS, 2009).
56. Many Basin towns were explicitly established as irrigation communities as part of soldier settlement schemes or, for Coleambally in 1968, as a consequence of the development of the Snowy River scheme. Community identity for these towns is therefore closely associated with the historical context of water resources development.
57. The water resource also provides, beyond specific uses, a broader amenity that contributes greatly to the social values that communities and individuals consider important. Rivers, lakes, creeks and streams engender a sense of place for communities, which in turn helps to maintain the social fabric that the Basin's communities value.
58. This can also take the form of direct use of the water resource for recreational activities such as fishing, boating, swimming, and camping, as well as the more

indirect, but nevertheless, highly valued use to maintain sporting ovals and school grounds, and community facilities such as parks and gardens.

Recreation and tourism use

59. Recreation and tourism have few direct water consumption needs. However, their ongoing viability is closely related to the ecological health of rivers, lakes and other environmental assets, including Ramsar-listed wetlands. These sites represent significant tourist destinations for visitors and residents of the Murray-Darling Basin.
60. Service-based industries that draw tourists and provide amenity to Basin residents employ a large part of the Basin workforce, including in cultural and recreational services, wholesale and retail trade and hospitality services (accommodation, cafes and restaurants).
61. Recreational fishing makes a substantial contribution to the Murray-Darling Basin economy. The National Recreational and Indigenous Fishing Survey (Henry & Lyle, 2003) estimated that over 566,000 recreational fishers fished in the Murray-Darling Basin during the survey period (2000–01).
62. Approximately \$105 million (2001 dollar value) was spent on services and items attributed to inland recreational fishing in the NSW regions of the Basin, \$157 million in Victorian areas, \$33 million in Queensland, \$27 million in South Australia and \$7 million in the Australian Capital Territory. This includes expenditure on accommodation, camping gear, boats and trailers, clothing, fishing gear, licences and travel (Campbell & Murphy, 2005).
63. Tourism in the Basin is widespread and diverse and includes experiential and eco-tourism, boating and recreational fishing. Experiential tourism often relies on a vibrant food and wine sector, and as such has a close cultural association with irrigated agriculture. Activities such as boating, water sports and fishing depend to an extent on infrastructure developed to support the river regulation that maintains weir pools, while eco-tourism, boating, houseboating and fishing often rely on the natural attraction of aquatic ecosystems and water for the environment.
64. Data from state tourism departments was used to estimate that the total value of tourism associated with the River Murray alone was \$1.6 billion in 2005 (Howard, 2008).

Indigenous use

65. Australia has been home to Indigenous people for tens of thousands of years, sustaining cultural, social, economic and spiritual life. Indigenous people along the Murray and Darling rivers and throughout the Murray-Darling Basin talk of their deep relationship with the rivers. Trade routes, major gathering places and sacred sites exist across the Basin and continue to hold great significance for over 40 Indigenous nations. Twenty-one nations in the north of the Basin are represented by the

Northern Murray-Darling Basin Aboriginal Nations, and 21 in the south of the Basin are represented by the Murray Lower Darling Rivers Indigenous Nations.

66. Indigenous people have multiple interests in the water resources of the Murray-Darling Basin, including cultural, social, environmental, spiritual and economic interests. These interests include hunting or gathering food and other items for use that alleviate the need to purchase similar items and the use of water to support businesses in industries such as pastoralism and horticulture. The environmental health of the Murray-Darling Basin is of paramount importance in serving these interests. Indigenous people view water as inextricably connected to the land and rivers, and view themselves as an integral part of the river system. Because of this holistic understanding and connection, Indigenous people feel a deep responsibility for the health of rivers.
67. The concept of cultural flows helps to translate the complex relationship described above into the language of water planning and management. The provision of cultural flows has potential benefits for Indigenous people, such as improved health, wellbeing and empowerment from being able to care for their country and undertake cultural activities. It also provides an important and respectful acknowledgement of their culture, traditional knowledge, and spiritual attachment to place.
68. Indigenous bodies hold an estimated 81 water licences in the Basin. Under four state licensing regimes not all licences include a designated water allocation. Water that is allocated in the 81 licences totals some 8,237 ML. Of this, 2,601 ML is classified as 'High Security' or 'Reliable'. Most licences are in the regions of Macquarie–Castlereagh, Lower Darling, Lachlan, Murrumbidgee, Murray and Goulburn–Broken. Two water licences are held in the Victorian portion of the Basin associated with properties held by the Indigenous Land Corporation (Arthur, 2010).
69. Aboriginal groups hold an estimated 75 parcels of land in the Basin totalling 3,445 km², representing less than 1% of the whole Basin. The majority of this land has been obtained through the Indigenous Land Corporation on behalf of Indigenous groups and is inalienable freehold title (Arthur, 2010). The extent to which Indigenous groups may obtain control or influence over land that is subject to native title determination or to Indigenous Land Use Agreements is variable ranging from agreements for access, hunting and fishing to particular commercial arrangements. They rarely provide for exclusive control of land. Approximately 339,236 km², around 33% of the Basin, is subject to native title application. Native title has been found to exist over some 8,307 km² of the Basin, principally in the regions of Murray and Wimmera–Avoca. Some 101,457 km², around 10% of the Basin, is subject to Indigenous Land Use Agreements under native title. Agreements have been established mostly in parts of the regions of Paroo, Condamine–Balonne, Murrumbidgee, Murray, Wimmera–Avoca and Loddon (Arthur, 2010).

Social and economic circumstances of people living in the Basin

Population

70. In 2006, over 2 million people were living in the Murray-Darling Basin and 78% of this Basin population were identified as residing in one of the over 400 urban centres, towns and rural localities spread across the Basin. The remaining 22% of Basin residents lived rurally outside of these locations and a further 36,000 people reported that they worked in the Basin but did not live in the Basin.

Basin communities (2006)				
		Population ('000)	Population (%)	Number of towns
Large urban centres	(more than 10,000 people)	957.6	48	19
Medium urban centres	(5,000 – 9,999 people)	218.2	11	31
Small towns	(2,000 – 4,999 people)	173.0	9	57
Small towns	(1,000 – 1,999 people)	103.0	5	71
Rural localities	(fewer than 1,000 people)	106.3	5	230
Rural living		446.5	22	0
Total Murray-Darling Basin		2,004.7		408

Source: Socio-Economic Context for the Murray-Darling Basin, Australian Bureau of Statistics, 2009

71. The majority of the Basin population, over 70%, when classified by the Commonwealth Department of Health and Aged Care Accessibility/ Remoteness Index of Australia, are shown to be living in either Canberra or the inner regional areas in the south-east and east of the Basin. The population becomes increasingly remote following a south-east to north-west gradient.

Employment and unemployment

72. In 2006 there were 922,000 people employed in the Basin with over 21% of this employment located in Canberra. Of those residents considered to be part of the labour force, 5% were at the time classified as unemployed and this was comparable to the 5.2% of the total Australian labour force that were unemployed at the same time.

Employed and unemployed persons (2006)				
	Population ('000)			% of labour force unemployed
	Unemployed	Employed	Total labour force	
Canberra	6.7	194.5	201.2	3.3
Inner regional Australia	27.2	471.8	499.0	5.4
Outer regional Australia	13.3	228.3	241.6	5.5
Remote Australia	1.3	23.2	24.5	5.4
Very remote Australia	0.2	3.7	3.9	4.5
Total Murray-Darling Basin	48.8	921.6	970.4	5.0

Source: ABS Census of Population and Housing 2006

73. The distribution of employed persons across the industries of the Basin is not too dissimilar to the National distribution. The significant exception is agriculture, forestry and fishing which is a dominant industry in the Basin. The professional, information, financial and administrative services are less represented in the Basin. The exclusion of Canberra from the Basin's distribution provides a more representative view of the industries Basin residents are employed in.

Industry of employment (2006)			
	Employed persons		
	Canberra	Murray-Darling Basin (excluding Canberra)	Australia
Agriculture, forestry and fishing	0.3%	13.3%	3.2%
Mining	0.0%	1.0%	1.2%
Manufacturing	2.7%	10.6%	10.7%
Electricity, gas, water and waste services	0.7%	1.2%	1.0%
Construction	5.5%	7.1%	8.0%
Wholesale trade	1.4%	3.4%	4.5%
Retail trade	8.9%	11.9%	11.7%
Accommodation and food services	6.0%	6.3%	6.5%
Transport, postal and warehousing	2.4%	4.5%	4.8%
Information media and telecommunications	2.2%	1.1%	2.0%
Financial and insurance services	2.1%	2.0%	3.9%
Rental, hiring and real estate services	1.4%	1.1%	1.7%
Professional, scientific and technical services	9.7%	3.5%	6.8%
Administrative and support services	2.6%	2.4%	3.2%
Public administration and safety	30.7%	7.2%	6.9%
Education and training	9.1%	7.9%	7.9%
Health care and social assistance	9.0%	10.9%	10.8%
Arts and recreation services	1.8%	0.9%	1.4%
Other services	3.4%	3.7%	3.8%
Total employed persons ('000)	175.8	745.5	9,104.2

Income

74. Excluding Canberra, almost half (47%) of the Basin's income earners in 2006 earned less than \$400 per week as gross income, slightly more than the national proportion of 45%. For higher incomes, 17% of working Basin residents earned more than \$1,000 of gross income per week which was less than the national proportion of almost 20%. A similar pattern, of more lower income earners and fewer higher income earners, emerges when the gross weekly incomes are combined for families.

Gross weekly income (2006)			
	Canberra	Murray-Darling Basin (excluding Canberra)	Australia
Individual income			
Negative income	0.3%	0.8%	0.5%
Nil income	6.0%	5.9%	7.3%
\$1–\$149	6.9%	7.8%	7.6%
\$150–\$249	9.0%	18.1%	15.3%
\$250–\$399	9.6%	16.9%	14.2%
\$400–\$599	11.6%	17.4%	15.0%
\$600–\$799	10.7%	12.0%	11.7%
\$800–\$999	10.9%	7.7%	8.7%
\$1,000–\$1,299	13.6%	6.8%	8.5%
\$1,300–\$1,599	9.0%	3.3%	4.7%
\$1,600–\$1,999	6.0%	1.6%	2.7%
\$2,000 or more	6.3%	1.7%	3.8%
Total individuals	261.3	1,322.1	15,918.0
Family income			
Less than \$500	6.6%	17.6%	14.2%
\$500 –\$999	14.5%	29.4%	24.4%
\$1000–\$2000	36.4%	39.9%	38.8%
More than \$2000	42.5%	13.1%	22.6%
Total families	84.5	447.2	5,219.2

Source: ABS Census of Population and Housing 2006

Socio Economic Indexes for Areas (SEIFA)

75. The Index of Relative Socio-economic Advantage and Disadvantage (IRSAD) is a general socio-economic index produced by the ABS from the 2006 Census of Population and Housing that provides a measure of relative disadvantage as well as measures of relative advantage. There are 21 measures included such as: low or high income, internet connection, occupation and education.

Index of Relative Socio-economic Advantage and Disadvantage (2006)				
Murray-Darling Basin (MDB)			Australia	
	% of MDB Collection Districts	% of MDB population residing in these Collection Districts	% of Aust. Collection Districts	% of Aust. population residing in these Collection Districts
Low score	22.4%	22.2%	15.1%	13.5%
High score	6.6%	9.4%	17.0%	18.5%

Source: ABS Census of Population and Housing 2006

76. A low SEIFA score indicates relatively greater disadvantage and less advantage in general.
77. Areas with a low score could have (among other things) many households with low incomes, or many people in unskilled occupations, and few households with high incomes, or few people in skilled occupations.
78. Areas with a high score, however, could have many households with high incomes, or many people in skilled occupations, and few households with low incomes, or few people in unskilled occupations.

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Schedule 2—Matters relating to surface water SDL resource units

Note: See sections 6.02, 6.03, 6.04, 6.05, Schedule 3, the definition of BDL in section 1.07, and Part 3 of Chapter 9.

	Column 1	Column 2
Item	Surface water SDL resource unit (code)	Long-term average sustainable diversion limit for SDL resource unit
Queensland		
Warrego-Paroo-Nebine water resource plan area		
1	Paroo (SS29)	The limit is the BDL. Note: The Authority estimates the BDL to be 9.9 GL per year and therefore this limit is estimated to be 9.9 GL per year.
2	Warrego (SS28)	The limit is the BDL minus 8 GL per year (local reduction amount). Note 1: The Authority estimates the BDL to be 128 GL per year and therefore this limit is estimated to be 120 GL per year. Note 2: As of 30 September 2011, the reduction achieved is estimated to be 8 GL per year and thus the gap remaining is estimated to be 0 GL per year in relation to the local reduction amount for this SDL resource unit.
3	Nebine (SS27)	The limit is the BDL minus 1 GL per year (local reduction amount). Note 1: The Authority estimates the BDL to be 31 GL per year and therefore this limit is estimated to be 30 GL per year. Note 2: As of 30 September 2011, the reduction achieved is estimated to be 1 GL per year and thus the gap remaining is estimated to be 0 GL per year in relation to the local reduction amount for this SDL resource unit.
Condamine-Balonne water resource plan area		
4	Condamine-Balonne (SS26)	The limit is the BDL minus 100 GL per year (local reduction amount) minus the SDL resource unit shared reduction amount. Note 1: The Authority estimates the BDL to be 978 GL per year and therefore this limit is estimated to be 878 GL per year minus the SDL resource unit shared reduction amount. Note 2: As of 30 September 2011, the reduction achieved is estimated to be 5 GL per year and thus the gap remaining is estimated to be 95 GL per year in relation to the local reduction amount for this SDL resource unit.

Schedule 2—Matters relating to surface water SDL resource units

	Column 1	Column 2
Item	Surface water SDL resource unit (code)	Long-term average sustainable diversion limit for SDL resource unit
Moonie water resource plan area		
5	Moonie (SS25)	<p>The limit is the BDL minus the SDL resource unit shared reduction amount.</p> <p>Note 1: The Authority estimates the BDL to be 84 GL per year and therefore this limit is estimated to be 84 GL per year minus the SDL resource unit shared reduction amount.</p> <p>Note 2: As of 30 September 2011, the reduction achieved is estimated to exceed the local reduction amount of 0 GL per year. It is estimated that 1 GL per year of held environmental water is available to contribute to the calculation of the SDL resource unit shared reduction amount for the SDL resource units in the northern Basin shared zone.</p>
Queensland Border Rivers water resource plan area		
6	Queensland Border Rivers (SS24)	<p>The limit is the BDL minus 8 GL per year (local reduction amount) minus the SDL resource unit shared reduction amount.</p> <p>Note 1: The Authority estimates the BDL to be 320 GL per year and therefore this limit is estimated to be 312 GL per year minus the SDL resource unit shared reduction amount.</p> <p>Note 2: As of 30 September 2011, the reduction achieved is estimated to be 7 GL per year and thus the gap remaining is estimated to be 1 GL per year in relation to the local reduction amount for this SDL resource unit.</p>
New South Wales		
Intersecting Streams water resource plan area		
7	Intersecting Streams (SS17)	<p>The limit is the BDL minus the SDL resource unit shared reduction amount.</p> <p>Note 1: The Authority estimates the BDL to be 114 GL per year and therefore this limit is estimated to be 114 GL per year minus the SDL resource unit shared reduction amount.</p> <p>Note 2: As of 30 September 2011, the reduction achieved is estimated to exceed the local reduction amount of 0 GL per year. It is estimated that 8 GL per year of held environmental water is available to contribute to the calculation of the SDL resource unit shared reduction amount for the SDL resource units in the northern Basin shared zone.</p>

	Column 1	Column 2
Item	Surface water SDL resource unit (code)	Long-term average sustainable diversion limit for SDL resource unit
Barwon-Darling Watercourse water resource plan area		
8	Barwon-Darling Watercourse (SS19)	<p>The limit is the BDL minus 6 GL per year (local reduction amount) minus the SDL resource unit shared reduction amount.</p> <p>Note 1: The Authority estimates the BDL to be 198 GL per year and therefore this limit is estimated to be 192 GL per year minus the SDL resource unit shared reduction amount.</p> <p>Note 2: As of 30 September 2011, the reduction achieved is estimated to exceed the local reduction amount of 6 GL per year. It is estimated that 16 GL per year of held environmental water is available to contribute to the calculation of the SDL resource unit shared reduction amount for the SDL resource units in the northern Basin shared zone.</p>
New South Wales Border Rivers water resource plan area		
9	NSW Border Rivers (SS23)	<p>The limit is the BDL minus 7 GL per year (local reduction amount) minus the SDL resource unit shared reduction amount.</p> <p>Note 1: The Authority estimates the BDL to be 303 GL per year and therefore this limit is estimated to be 296 GL per year minus the SDL resource unit shared reduction amount.</p> <p>Note 2: As of 30 September 2011, the reduction achieved is estimated to be 0.1 GL per year and thus the gap remaining is estimated to be 6.9 GL per year in relation to the local reduction amount for this SDL resource unit.</p>
Gwydir water resource plan area		
10	Gwydir (SS22)	<p>The limit is BDL minus 42 GL per year (local reduction amount).</p> <p>Note 1: The Authority estimates the BDL to be 450 GL per year and therefore this limit is estimated to be 408 GL per year.</p> <p>Note 2: As of 30 September 2011, the reduction achieved is estimated to be 42 GL per year and thus the gap remaining is estimated to be 0 GL per year in relation to the local reduction amount for this SDL resource unit.</p>
Namoi water resource plan area		
11	Namoi (SS21)	<p>The limit is BDL minus 10 GL per year (local reduction amount) minus the SDL resource unit shared reduction amount.</p> <p>Note 1: The Authority estimates the BDL to be 508 GL per year and therefore this limit is estimated to be 498 GL per year minus the SDL resource unit shared reduction amount.</p> <p>Note 2: As of 30 September 2011, the reduction achieved is estimated to be 5 GL per year and thus the gap remaining is estimated to be 5 GL per year in relation to the local reduction amount for this SDL resource unit.</p>

	Column 1	Column 2
Item	Surface water SDL resource unit (code)	Long-term average sustainable diversion limit for SDL resource unit
Macquarie-Castlereagh water resource plan area		
12	Macquarie-Castlereagh (SS20)	<p>The limit is BDL minus 65 GL per year (local reduction amount) minus the SDL resource unit shared reduction amount.</p> <p>Note 1: The Authority estimates the BDL to be 734 GL per year and therefore this limit is estimated to be 669 GL per year minus the SDL resource unit shared reduction amount.</p> <p>Note 2: As of 30 September 2011, the reduction achieved is estimated to exceed the local reduction amount of 65 GL per year. It is estimated that 1 GL per year of held environmental water is available to contribute to the calculation of the SDL resource unit shared reduction amount for the SDL resource units in the northern Basin shared zone.</p>
Lachlan water resource plan area		
13	Lachlan (SS16)	<p>The limit is BDL minus 48 GL per year (local reduction amount).</p> <p>Note 1: The Authority estimates the BDL to be 618 GL per year and therefore this limit is estimated to be 570 GL per year.</p> <p>Note 2: As of 30 September 2011, the reduction achieved is estimated to be 48 GL per year and thus the gap remaining is estimated to be 0 GL per year in relation to the local reduction amount for this SDL resource unit.</p>
Murrumbidgee water resource plan area		
14	Murrumbidgee (SS15)	<p>The limit is the BDL minus 320 GL per year (local reduction amount) minus the SDL resource unit shared reduction amount.</p> <p>Note 1: The Authority estimates the BDL to be 2501 GL per year and therefore this limit is estimated to be 2181 GL per year minus the SDL resource unit shared reduction amount.</p> <p>Note 2: As of 30 September 2011, the reduction achieved is estimated to be 137 GL per year and thus the gap remaining is estimated to be 183 GL per year in relation to the local reduction amount for this SDL resource unit.</p>
New South Wales Murray and Lower Darling water resource plan area		
15	New South Wales Murray (SS14)	<p>The limit is the BDL minus 262 GL per year (local reduction amount) minus the SDL resource unit shared reduction amount.</p> <p>Note 1: The Authority estimates the BDL to be 1812 GL per year and therefore this limit is estimated to be 1550 minus the SDL resource unit shared reduction amount.</p> <p>Note 2: As of 30 September 2011, the reduction achieved is estimated to be 194 GL per year and thus the gap remaining is estimated to be 68 GL per year in relation to the local reduction amount for this SDL resource unit.</p>

	Column 1	Column 2
Item	Surface water SDL resource unit (code)	Long-term average sustainable diversion limit for SDL resource unit
16	Lower Darling (SS18)	<p>The limit is BDL minus 8 GL per year (local reduction amount) minus the SDL resource unit shared reduction amount.</p> <p>Note 1: The Authority estimates the BDL to be 60.5 GL per year and therefore this limit is estimated to be 52.5 GL per year minus the SDL resource unit shared reduction amount.</p> <p>Note 2: As of 30 September 2011, the reduction achieved is estimated to be 0.4 GL per year and thus the gap remaining is estimated to be 7.6 GL per year in relation to the local reduction amount for this SDL resource unit.</p>
Victoria		
Victorian Murray water resource plan area		
17	Victorian Murray (SS2)	<p>The limit is the BDL minus 253 GL per year (local reduction amount) minus the SDL resource unit shared reduction amount.</p> <p>Note 1: The Authority estimates the BDL to be 1707 GL per year and therefore this limit is estimated to be 1454 GL per year minus the SDL resource unit shared reduction amount.</p> <p>Note 2: As of 30 September 2011, the reduction achieved is estimated to be 190 GL per year and thus the gap remaining is estimated to be 63 GL per year in relation to the local reduction amount for this SDL resource unit.</p>
18	Kiewa (SS3)	<p>The limit on take is the BDL minus the SDL resource unit shared reduction amount.</p> <p>Note: The Authority estimates the BDL to be 25 GL per year and therefore this limit is estimated to be 25 GL per year minus the SDL resource unit shared reduction amount.</p>
Northern Victoria water resource plan area		
19	Ovens (SS4)	<p>The limit on take is the BDL minus the SDL resource unit shared reduction amount.</p> <p>Note: The Authority estimates the BDL to be 83 GL per year and therefore this limit is estimated to be 83 GL per year minus the SDL resource unit shared reduction amount.</p>
20	Goulburn (SS6)	<p>The limit is the BDL minus 344 GL per year (local reduction amount) minus the SDL resource unit shared reduction amount.</p> <p>Note 1: The Authority estimates the BDL to be 1689 GL per year and therefore this limit is estimated to be 1345 GL per year minus the SDL resource unit shared reduction amount.</p> <p>Note 2: As of 30 September 2011, the reduction achieved is estimated to be 245 GL per year and thus the gap remaining is estimated to be 99 GL per year in relation to the local reduction amount for this SDL resource unit.</p>

Schedule 2—Matters relating to surface water SDL resource units

	Column 1	Column 2
Item	Surface water SDL resource unit (code)	Long-term average sustainable diversion limit for SDL resource unit
21	Broken (SS5)	The limit is BDL minus the SDL resource unit shared reduction amount. Note: The Authority estimates the BDL to be 56 GL per year and therefore this limit is estimated to be 56 GL per year minus the SDL resource unit shared reduction amount.
22	Campaspe (SS7)	The limit is the BDL minus 18 GL per year (local reduction amount) minus the SDL resource unit shared reduction amount. Note 1: The Authority estimates the BDL to be 153 GL per year and therefore this limit is estimated to be 135 GL per year minus the SDL resource unit shared reduction amount. Note 2: As of 30 September 2011, the reduction achieved is estimated to be 6 GL per year and thus the gap remaining is estimated to be 12 GL per year in relation to the local reduction amount for this SDL resource unit.
23	Loddon (SS8)	The limit is the BDL minus 12 GL per year (local reduction amount) minus the SDL resource unit shared reduction amount. Note 1: The Authority estimates the BDL to be 179 GL per year and therefore this limit is estimated to be 167 GL per year minus the SDL resource unit shared reduction amount. Note 2: As of 30 September 2011, the reduction achieved is estimated to be 2 GL per year and thus the gap remaining is estimated to be 10 GL per year in relation to the local reduction amount for this SDL resource unit.
Wimmera – Mallee (surface water) water resource plan area		
24	Wimmera-Mallee (surface water) (SS9)	The limit is the BDL minus 23 GL per year (local reduction amount). Note 1: The Authority estimates the BDL to be 129 GL per year and therefore this limit is estimated to be 106 GL per year. Note 2: As of 30 September 2011, the reduction achieved is estimated to be 0 GL per year and thus the gap remaining is estimated to be 23 GL per year in relation to the local reduction amount for this SDL resource unit.
South Australia		
South Australian Murray water resource plan area		
25	South Australian Murray (SS11)	The limit is the BDL minus 101 GL per year (local reduction amount) minus the SDL resource unit shared reduction amount. Note 1: The Authority estimates the BDL to be 665 GL per year and therefore this limit is estimated to be 564 GL per year minus the SDL resource unit shared reduction amount.

Schedule 2— Matters relating to surface water SDL resource units

	Column 1	Column 2
Item	Surface water SDL resource unit (code)	Long-term average sustainable diversion limit for SDL resource unit
		Note 2: As of 30 September 2011, the reduction achieved is estimated to be 79 GL per year and thus the gap remaining is estimated to be 22 GL per year in relation to the local reduction amount for this SDL resource unit.
26	South Australian Non-Prescribed Areas (SS10)	The limit is the BDL. Note: The Authority estimates the BDL to be 3.5 GL per year and therefore this limit is estimated to be 3.5 GL per year.
Eastern Mount Lofty Ranges water resource plan area		
27	Eastern Mount Lofty Ranges (SS13)	The limit is the BDL minus the SDL resource unit shared reduction amount. Note: The Authority estimates the BDL to be 28.3 GL per year and therefore this limit is estimated to be 28.3 GL per year minus the SDL resource unit shared reduction amount.
28	Marne-Saunders (SS12)	The limit is the BDL. Note: The Authority estimates the BDL to be 2.9 GL per year and therefore this limit is estimated to be 2.9 GL per year.
Australian Capital Territory		
Australian Capital Territory (surface water) water resource plan area		
29	Australian Capital Territory (surface water) (SS1)	The limit is the BDL. Note: The Authority estimates the BDL to be 52.5 GL per year and therefore this limit is estimated to be 52.5 GL per year.

Schedule 3—BDLs for surface water SDL resource units

Note 1: See Schedule 2 and the definition of BDL in section 1.07.

Note 2: Some estimates have been subject to rounding.

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
Queensland		
Warrego-Paroo-Nebine water resource plan area		
1	Paroo (SS29)	<p>The BDL is the sum of:</p> <ul style="list-style-type: none"> (a) the long-term annual average limit on the quantity of water that can be taken from watercourses and by floodplain harvesting (excluding take under basic rights) calculated by: <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by those forms of take for each year of the historical climate conditions under State water management law as at 30 June 2009; and (ii) dividing that quantity by all of the years of the historical climate conditions; and (b) the long-term annual average take of water from watercourses under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and (c) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and (d) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and (e) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009. <p>Note to paragraph (a): The Authority estimates this to be 0.2 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (c) and (d): The Authority estimates the sum of items (c) and (d) to be 9.7 GL per year.</p> <p>Note to paragraph (e): The Authority estimates this to be zero GL per year.</p>

Schedule 3—BDLs for the surface water SDL resource units

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
2	Warrego (SS28)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from watercourses and by floodplain harvesting (excluding take under basic rights) calculated by:</p> <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by those forms of take for each year of the historical climate conditions under State water management law as at 30 June 2009; and (ii) dividing that quantity by all of the years of the historical climate conditions; and <p>(b) the long-term annual average take of water from watercourses under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(c) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(d) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(e) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 45 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (c) and (d): The Authority estimates the sum of items (c) and (d) to be 83 GL per year.</p> <p>Note to paragraph (e): The Authority estimates this to be zero GL per year.</p>
3	Nebine (SS27)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from watercourses and by floodplain harvesting (excluding take under basic rights) calculated by:</p> <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by those forms of take for each year of the historical climate conditions under State water management law as at 30 June 2009; and (ii) dividing that quantity by all of the years of the historical climate conditions; and

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
		<p>(b) the long-term annual average take of water from watercourses under basic rights calculated on the basis of the take under the level of development that existed as at 30 June 2009; and</p> <p>(c) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(d) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(e) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 6 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (c) and (d): The Authority estimates the sum of items (c) and (d) to be 25 GL per year.</p> <p>Note to paragraph (e): The Authority estimates this to be zero GL per year.</p>
Condamine-Balonne water resource plan area		
4	Condamine-Balonne (SS26)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from watercourses and by floodplain harvesting (excluding take under basic rights) calculated by:</p> <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by those forms of take for each year of the historical climate conditions under State water management law as at 30 June 2009; and (ii) dividing that quantity by all of the years of the historical climate conditions; and <p>(b) the long-term annual average take of water from watercourses under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(c) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(d) the long-term annual average take of water by runoff dams</p>

Schedule 3—BDLs for the surface water SDL resource units

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
		<p>under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(e) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 713 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (c) and (d): The Authority estimates the sum of items (c) and (d) to be 264 GL per year.</p> <p>Note to paragraph (e): The Authority estimates this to be 1 GL per year.</p>
Moonie water resource plan area		
5	Moonie (SS25)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from watercourses and by floodplain harvesting (excluding take under basic rights) calculated by:</p> <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by those forms of take for each year of the historical climate conditions under State water management law as at 30 June 2009; and (ii) dividing that quantity by all of the years of the historical climate conditions; and <p>(b) the long-term annual average take of water from watercourses under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(c) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(d) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(e) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 33 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority is yet to estimate this take.</p>

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
		<p>Note to paragraphs (c) and (d): The Authority estimates the sum of items (c) and (d) to be 51 GL per year.</p> <p>Note to paragraph (e): The Authority estimates this to be zero GL per year.</p>
Queensland Border Rivers water resource plan area		
6	Queensland Border Rivers (SS24)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from watercourses and by floodplain harvesting (excluding take under basic rights) calculated by:</p> <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by those forms of take for each year of the historical climate conditions under State water management law as at 30 June 2009; and (ii) dividing that quantity by all of the years of the historical climate conditions; and <p>(b) the long-term annual average take of water from watercourses under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(c) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(d) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(e) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 242 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (c) and (d): The Authority estimates the sum of items (c) and (d) to be 77 GL per year.</p> <p>Note to paragraph (e): The Authority estimates this to be 1 GL per year.</p>
New South Wales		
Intersecting Streams water resource plan area		
7	Intersecting Streams	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average take of water, averaged over</p>

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
	(SS17)	<p>the period from July 1993 to June 1999, from watercourses (excluding take under basic rights); and</p> <p>(b) the long-term annual average take of water from watercourses under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(c) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(d) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(e) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 3 GL per year.</p> <p>Note to paragraph (b): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (c) and (d): The Authority estimates the sum of items (c) and (d) to be 111 GL per year.</p> <p>Note to paragraph (e): The Authority estimates this to be zero GL per year.</p>
Barwon-Darling Watercourse water resource plan area		
8	Barwon-Darling Watercourse (SS19)	<p>The BDL is the long-term annual average limit on the quantity of water that can be taken calculated by:</p> <p>(i) summing the quantity of water that would have been taken in accordance with Schedule E to the Agreement for each year of the historical climate conditions; and</p> <p>(ii) dividing that quantity by all the years of the historical climate conditions.</p> <p>Note: The Authority estimates this to be 198 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p>
New South Wales Border Rivers water resource plan area		
9	NSW Border Rivers (SS23)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from regulated rivers and by floodplain harvesting (excluding take under basic rights) calculated by:</p> <p>(i) summing the quantity of water that would have been taken by those forms of take for each year of the historical climate conditions under State water</p>

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
		<p>management law as at 30 June 2009; and</p> <p>(ii) dividing that quantity by all of the years of the historical climate conditions; and</p> <p>(b) the long-term annual average take of water, averaged over the period from July 1993 to June 1999, for take from watercourses other than from regulated rivers (excluding take under basic rights); and</p> <p>(c) the long-term annual average take of water from watercourses under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(d) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(e) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(f) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 191 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority estimates this to be 16 GL per year.</p> <p>Note to paragraph (c): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (d) and (e): The Authority estimates the sum of (d) and (e) to be 95 GL per year.</p> <p>Note to paragraph (f): The Authority estimates this to be zero GL per year.</p>
Gwydir water resource plan area		
10	Gwydir (SS22)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from regulated rivers and by floodplain harvesting (excluding take under basic rights) calculated by:</p> <p>(i) summing the quantity of water that would have been taken by those forms of take for each year of the historical climate conditions under State water management law as at 30 June 2009; and</p> <p>(ii) dividing that quantity by all of the years of the historical climate conditions; and</p>

Schedule 3—BDLs for the surface water SDL resource units

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
		<p>(b) the long-term annual average take of water, averaged over the period from July 1993 to June 1999, for take from watercourses other than from regulated rivers (excluding take under basic rights); and</p> <p>(c) the long-term annual average take of water from watercourses under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(d) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(e) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(f) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 314 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority estimates this to be 11 GL per year.</p> <p>Note to paragraph (c): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (d) and (e): The Authority estimates the sum of items (d) and (e) to be 124 GL per year.</p> <p>Note to paragraph (f): The Authority estimates this to be 1 GL per year.</p>
Namoi water resource plan area		
11	Namoi (SS21)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from regulated rivers and by floodplain harvesting (excluding take under basic rights) calculated by:</p> <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by those forms of take for each year of the historical climate conditions calculated on the basis of the quantity of water that can be taken under State water management law as at 30 June 2009; and (ii) dividing that quantity by all of the years of the historical climate conditions; and <p>(b) the long-term annual average take of water, averaged over the period from July 1993 to June 1999, from watercourses other than from regulated rivers (excluding take under basic</p>

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
		<p>rights); and</p> <p>(c) the long-term annual average take of water from watercourses under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(d) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(e) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(f) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 265 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority estimates this to be 78 GL per year.</p> <p>Note to paragraph (c): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (d) and (e): The Authority estimates the sum of items (d) and (e) to be 160 GL per year.</p> <p>Note to paragraph (f): The Authority estimates this to be 5 GL per year.</p>
Macquarie-Castlereagh water resource plan area		
12	Macquarie-Castlereagh (SS20)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from regulated rivers and by floodplain harvesting (excluding take under basic rights) calculated by:</p> <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by those forms of take for each year of the historical climate conditions under State water management law (as if the applicable water sharing plan was not suspended) as at 30 June 2009; and (ii) dividing that quantity by all of the years of the historical climate conditions; and <p>(b) the long-term annual average take of water, averaged over the period from July 1993 to June 1999, from watercourses other than from regulated rivers (excluding take under basic rights); and</p> <p>(c) the long-term annual average take of water from watercourses under basic rights calculated on the basis of the take under</p>

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
		<p>the level of development that existed on 30 June 2009; and</p> <p>(d) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(e) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(f) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 380 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority estimates this to be 44 GL per year.</p> <p>Note to paragraph (c): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (d) and (e): The Authority estimates the sum of items (d) and (e) to be 266 GL per year.</p> <p>Note to paragraph (f): The Authority estimates this to be 44 GL per year.</p>
Lachlan water resource plan area		
13	Lachlan (SS16)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from regulated rivers and by floodplain harvesting (excluding take under basic rights) calculated by:</p> <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by those forms of take for each year of the historical climate conditions under State water management law (as if the applicable water sharing plan was not suspended) as at 30 June 2009; and (ii) dividing that quantity by all of the years of the historical climate conditions; and <p>(b) the long-term annual average take of water, averaged over the period from July 1993 to June 1999, from watercourses other than from regulated rivers (excluding take under basic rights); and</p> <p>(c) the long-term annual average take of water from watercourses under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(d) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic</p>

Schedule 3—BDLs for the surface water SDL resource units

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
		<p>rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(e) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(f) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 287 GL per year, but the estimate does not include an estimate of take for stock and domestic purposes. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority estimates this to be 16 GL per year.</p> <p>Note to paragraph (c): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (d) and (e): The Authority estimates the sum of items (d) and (e) to be 287 GL per year.</p> <p>Note to paragraph (f): The Authority estimates this to be 29 GL per year.</p>
Murrumbidgee water resource plan area		
14	Murrumbidgee (SS15)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from regulated rivers (excluding take under basic rights) calculated by:</p> <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by that form of take for each year of the historical climate conditions under State water management law (as if the applicable water sharing plan was not suspended) as at 30 June 2009 (but excluding held environmental water recovered by the Living Murray Initiative and by Water for Rivers); and (ii) dividing that quantity by all of the years of the historical climate conditions; and <p>(b) the long-term annual average take of water, averaged over the period from July 1993 to June 1999, from watercourses other than from regulated rivers (excluding take under basic rights); and</p> <p>(c) the long-term annual average take of water from watercourses other than from regulated rivers under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(d) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic</p>

Schedule 3—BDLs for the surface water SDL resource units

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
		<p>rights) calculated on the basis of the quantity of water that can be taken under State water management law as at 30 June 2009; and</p> <p>(e) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(f) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 1958 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority estimates this to be 42 GL per year.</p> <p>Note to paragraph (c): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (d) and (e): The Authority estimates the sum of items (d) and (e) to be 385 GL per year.</p> <p>Note to paragraph (f): The Authority estimates this to be 116 GL per year.</p>
New South Wales Murray and Lower Darling water resource plan area		
15	New South Wales Murray (SS14)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from regulated rivers (excluding take under basic rights) calculated by:</p> <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by that form of take for each year of the historical climate conditions under State water management law (as if the applicable water sharing plan was not suspended) as at 30 June 2009 (but excluding held environmental water recovered by the Living Murray Initiative and by Water for Rivers); and (ii) dividing that quantity by all of the years of the historical climate conditions; and <p>(b) the long-term annual average take of water, averaged over the period from July 1993 to June 1999, from watercourses other than from regulated rivers (excluding take under basic rights); and</p> <p>(c) the long-term annual average take of water from watercourses under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(d) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at</p>

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
		<p>30 June 2009; and</p> <p>(e) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(f) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 1680 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority estimates this to be 28 GL per year.</p> <p>Note to paragraph (c): The Authority is yet to estimate this take.</p> <p>Note to paragraph (d) and (e): The Authority estimates the sum of items (d) and (e) to be 80 GL per year.</p> <p>Note to paragraph (f): The Authority estimates this take to be 24 GL per year.</p>
16	Lower Darling (SS18)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from regulated rivers (excluding take under basic rights) calculated by:</p> <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by that form of take for each year of the historical climate conditions under State water management law (as if the applicable water sharing plan was not suspended) as at 30 June 2009 (but excluding held environmental water recovered by the Living Murray Initiative and by Water for Rivers); and (ii) dividing that quantity by all of the years of the historical climate conditions; and <p>(b) the long-term annual average take of water, averaged over the period from July 1993 to June 1999, for take from watercourses other than from regulated rivers (excluding take under basic rights); and</p> <p>(c) the long-term annual average take of water from watercourses under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(d) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(e) the long-term annual average take of water by runoff dams</p>

Schedule 3—BDLs for the surface water SDL resource units

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
		<p>under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(f) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 55 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority is yet to estimate this take.</p> <p>Note to paragraph (c): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (d) and (e): The Authority estimates the sum of items (d) and (e) to be 5.5 GL per year.</p> <p>Note to paragraph (f): The Authority estimates this to be zero GL per year.</p>
Victoria		
Victorian Murray water resource plan area		
17	Victorian Murray (SS2)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from watercourses (excluding take under basic rights) calculated by:</p> <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by that form of take for each year of the historical climate conditions under State water management law as at 30 June 2009 (but excluding held environmental water recovered by the Living Murray Initiative and by Water for Rivers); and (ii) dividing that quantity by all of the years of the historical climate conditions; and <p>(b) the long-term annual average take of water from watercourses under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(c) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(d) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(e) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p>

Schedule 3—BDLs for the surface water SDL resource units

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
		<p>Note to paragraph (a): The Authority estimates this to be 1662 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (c) and (d): The Authority estimates the sum of items (c) and (d) to be 23 GL per year.</p> <p>Note to paragraph (e): The Authority estimates this to be 22 GL per year.</p>
18	Kiewa (SS3)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from watercourses (excluding take under basic rights) calculated by:</p> <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by that form of take for each year of the historical climate conditions under State water management law as at 30 June 2009; and (ii) dividing that quantity by all of the years of the historical climate conditions; and <p>(b) the long-term annual average take of water from watercourses under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(c) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(d) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(e) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 11 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (c) and (d): The Authority estimates the sum of items (c) and (d) to be 6.6 GL per year.</p> <p>Note to paragraph (e): The Authority estimates this to be 7 GL per year.</p>

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
Northern Victoria water resource plan area		
19	Ovens (SS4)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from watercourses (excluding take under basic rights) calculated by:</p> <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by that form of take for each year of the historical climate conditions under State water management law as at 30 June 2009; and (ii) dividing that quantity by all of the years of the historical climate conditions; and <p>(b) the long-term annual average take of water from watercourses under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(c) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(d) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(e) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 25 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority is yet to estimate this take.</p> <p>Note to paragraph (c) and (d): The Authority estimates the sum of (c) and (d) to be 26 GL per year.</p> <p>Note to paragraph (e): The Authority estimates this to be 32 GL per year.</p>
20	Goulburn (SS6)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from regulated rivers (excluding take under basic rights) calculated by:</p> <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by that form of take for each year of the historical climate conditions under State water management law as at 30 June 2009 (but excluding held environmental water recovered by the Living Murray Initiative and by Water for Rivers); and

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
		<p>(ii) dividing that quantity by all of the years of the historical climate conditions; and</p> <p>(b) the long-term annual average take of water from regulated rivers under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(c) the long-term annual average limit on the quantity of water that can be taken from watercourses that are not regulated rivers (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(d) the long-term annual average take of water from watercourses that are not regulated rivers under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(e) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) under State water management law as at 30 June 2009; and</p> <p>(f) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(g) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 1552 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority is yet to estimate this take.</p> <p>Note to paragraph (c): The Authority estimates this to be 29 GL per year.</p> <p>Note to paragraph (d): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (e) and (f): The Authority estimates the sum of items (e) and (f) to be 86 GL per year.</p> <p>Note to paragraph (g): The Authority estimates this to be 23 GL per year.</p>
21	Broken (SS5)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from regulated rivers (excluding take under basic rights) calculated by:</p> <p>(i) summing the quantity of water that would have been taken by that form of take for each year of the historical climate conditions under State water management law</p>

Schedule 3—BDLs for the surface water SDL resource units

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
		<p>as at 30 June 2009 (but excluding held environmental water recovered by the Living Murray Initiative and by Water for Rivers); and</p> <p>(ii) dividing that quantity by all of the years of the historical climate conditions; and</p> <p>(b) the long-term annual average take of water from regulated rivers under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(c) the long-term annual average limit on the quantity of water that can be taken from watercourses that are not regulated rivers (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(d) the long-term annual average take of water from watercourses that are not regulated rivers under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(e) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(f) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(g) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 13 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority is yet to estimate this take.</p> <p>Note to paragraph (c): The Authority estimates this to be 0 GL per year.</p> <p>Note to paragraph (d): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (e) and (f): The Authority estimates the sum of items (e) and (f) to be 30 GL per year.</p> <p>Note to paragraph (g): The Authority estimates this to be 13 GL per year.</p>
22	Campaspe (SS7)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from regulated rivers (excluding take under basic rights) calculated by:</p>

Schedule 3—BDLs for the surface water SDL resource units

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
		<p>(i) summing the quantity of water that would have been taken by that form of take for each year of the historical climate conditions under State water management law as at 30 June 2009 (but excluding held environmental water recovered by the Living Murray Initiative); and</p> <p>(ii) dividing that quantity by all of the years of the historical climate conditions; and</p> <p>(b) the long-term annual average take of water from regulated rivers under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(c) the long-term annual average limit on the quantity of water that can be taken from watercourses that are not regulated rivers (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(d) the long-term annual average take of water from watercourses that are not regulated rivers under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(e) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that can be taken under State water management law as at 30 June 2009; and</p> <p>(f) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(g) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 111 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority is yet to estimate this take.</p> <p>Note to paragraph (c): The Authority estimates this to be 2 GL per year.</p> <p>Note to paragraph (d): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (e) and (f): The Authority estimates the sum of items (e) and (f) to be 39 GL per year.</p> <p>Note to paragraph (g): The Authority estimates this to be 1 GL per year.</p>
23	Loddon (SS8)	The BDL is the sum of:

Schedule 3—BDLs for the surface water SDL resource units

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
		<p>(a) the long-term annual average limit on the quantity of water that can be taken from regulated rivers (excluding take under basic rights) calculated by:</p> <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by that form of take for each year of the historical climate conditions under State water management law as at 30 June 2009; and (ii) dividing that quantity by all of the years of the historical climate conditions; and <p>(b) the long-term annual average take of water from regulated rivers under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(c) the long-term annual average limit on the quantity of water that can be taken from watercourses that are not regulated rivers calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(d) the long-term annual average take of water from watercourses that are not regulated rivers under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(e) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and</p> <p>(f) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(g) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 89 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority is yet to estimate this take.</p> <p>Note to paragraph (c): The Authority estimates this to be 0 GL per year.</p> <p>Note to paragraph (d): The Authority is yet to estimate this take.</p> <p>Note to paragraphs (e) and (f): The Authority estimates the sum of items (e) and (f) to be 85 GL per year.</p> <p>Note to paragraph (g): The Authority estimates this to be 5 GL per year.</p>

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
Wimmera – Mallee (surface water) water resource plan area		
24	Wimmera-Mallee (surface water) (SS9)	<p>The BDL is the sum of:</p> <ul style="list-style-type: none"> (a) the long-term annual average limit on the quantity of water that can be taken from regulated rivers (excluding take under basic rights) calculated by: <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by that form of take for each year of the historical climate conditions under State water management law as at 30 June 2009 (but excluding held environmental water recovered under the Wimmera-Mallee Pipeline Project); and (ii) dividing that quantity by all of the years of the historical climate conditions; and (b) the long-term annual average take of water from regulated rivers under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and (c) the long-term annual average limit on the quantity of water that can be taken from watercourses that are not regulated rivers (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and (d) the long-term annual average take of water from watercourses that are not regulated rivers under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and (e) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the quantity of water that could be taken under State water management law as at 30 June 2009; and (f) the long-term annual average take of water by runoff dams under basic rights calculated on the basis of the take under the level of development that existed on 30 June 2009; and (g) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009. <p>Note to paragraph (a): The Authority estimates this to be 66 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20.</p> <p>Note to paragraph (b): The Authority is yet to estimate this take.</p> <p>Note to paragraph (c): The Authority estimates this to be 1 GL per year.</p> <p>Note to paragraph (d): The Authority is yet to estimate this take.</p>

Schedule 3—BDLs for the surface water SDL resource units

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
		Note to paragraphs (e) and (f): The Authority estimates the sum of items (e) and (f) to be 61 GL per year. Note to paragraph (g): The Authority estimates this to be 1 GL per year.
South Australia		
South Australian Murray water resource plan area		
25	South Australian Murray (SS11)	The BDL is the long-term annual average limit on the quantity of water that can be taken from watercourses calculated by: <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by that form of take in accordance with Schedule E to the Agreement for each year of the historical climate conditions (but excluding water recovered under the Living Murray Initiative); and (ii) dividing that quantity by all the years of the historical climate conditions. <p>Note: The Authority estimates this to be 665 GL per year. The details of modelling assumptions and system set up used for making this estimate are documented in MDBA Technical Report 2010/20 and MDBA Technical Report 2011/01.</p>
26	South Australian Non-Prescribed Areas (SS10)	The BDL is the long-term annual average limit on the quantity of water that can be taken by runoff dams calculated by: <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by those forms of take for each year of the historical climate conditions under State water management law as at 30 June 2009; and (ii) dividing that quantity by all of the years of the historical climate conditions. <p>Note: The Authority estimates this to be 3.5 GL per year.</p>
Eastern Mount Lofty Ranges water resource plan area		
27	Eastern Mount Lofty Ranges (SS13)	The BDL is the long-term annual average limit on the quantity of water that can be taken from watercourses, by runoff dams and net take of water by commercial plantations calculated by: <ul style="list-style-type: none"> (i) summing the quantity of water that would have been taken by those forms of take for each year of the historical climate conditions under State water management law as at 30 June 2009; and (ii) dividing that quantity by all of the years of the historical climate conditions. <p>Note: The Authority estimates this to be 28.3 GL per year.</p>
28	Marne-Saunders (SS12)	The BDL is the long-term annual average limit on the quantity of water that can be taken from watercourses, by runoff dams and net take of water by commercial plantations calculated by:

	Column 1	Column 2
Item	SDL resource unit (code)	BDL for the SDL resource unit
		<p>(i) summing the quantity of water that would have been taken by those forms of take for each year of the historical climate conditions under State water management law as at 18 January 2010; and</p> <p>(ii) dividing that quantity by all of the years of the historical climate conditions.</p> <p>Note: The Authority estimates this to be 2.9 GL per year.</p>
Australian Capital Territory		
Australian Capital Territory (surface water) water resource plan area		
29	Australian Capital Territory (surface water) (SS1)	<p>The BDL is the sum of:</p> <p>(a) the long-term annual average limit on the quantity of water that can be taken from watercourses calculated by:</p> <p>(i) summing the quantity of water that would have been taken by that form of take in accordance with Schedule E to the Agreement for each year of the historical climate conditions (including an adjustment to account for population growth to 30 June 2009); and</p> <p>(ii) dividing that quantity by all the years of the historical climate conditions; and</p> <p>(b) the long-term annual average limit on the quantity of water that can be taken by runoff dams (excluding take under basic rights) calculated on the basis of the take under the level of development that existed on 30 June 2009; and</p> <p>(c) the long-term annual average take of water by runoff dams under basic rights at the level of development that existed on 30 June 2009; and</p> <p>(d) the long-term annual average net take of water by commercial plantations calculated on the basis of the take under the level of development that existed on 30 June 2009.</p> <p>Note to paragraph (a): The Authority estimates this to be 40.5 GL per year.</p> <p>Note to paragraphs (b) and (c): The Authority estimates the sum of items (b) and (c) to be 1 GL per year.</p> <p>Note to paragraph (d): The Authority estimates this to be 11 GL per year.</p>

Schedule 4—Matters relating to groundwater SDL resource units

Note: See sections 6.03, 6.04, the definition of BDL in section 1.07 and Part 3 of Chapter 9.

	Column 1	Column 2	Column 3	Column 4
Item	Groundwater SDL resource unit (code)	Groundwater covered by groundwater SDL resource unit	BDL for the SDL resource unit in giganlitres (GL) per year	Long-term average sustainable diversion limit for SDL resource unit in giganlitres (GL) per year
Australian Capital Territory				
Australian Capital Territory (groundwater) water resource plan area (GW1)				
1	Australian Capital Territory (Groundwater) (GS56)	all groundwater	1.70	7.25
Victoria				
Goulburn-Murray water resource plan area (GW2)				
2	Goulburn-Murray: Goulburn–Broken Highlands (GS8a)	all groundwater	15.2	35.8
3	Goulburn-Murray: Loddon–Campaspe Highlands (GS8b)	all groundwater	13.0	16.8
4	Goulburn-Murray: Murray Highlands (GS8c)	all groundwater	5.44	5.44
5	Goulburn-Murray: Ovens Highlands (GS8d)	all groundwater	4.67	4.67

Schedule 4—Matters relating to groundwater SDL resource units

	Column 1	Column 2	Column 3	Column 4
Item	Groundwater SDL resource unit (code)	Groundwater covered by groundwater SDL resource unit	BDL for the SDL resource unit in gigalitres (GL) per year	Long-term average sustainable diversion limit for SDL resource unit in gigalitres (GL) per year
6	Goulburn-Murray: Ovens-Kiewa Sedimentary Plain (GS8e)	groundwater in: (a) the Coonambidgal Formation; and (b) the Shepparton Formation; and (c) the Calivil Formation; and (d) the Renmark Group	28.5	30.5
7	Goulburn-Murray: Victorian Riverine Sedimentary Plain (shallow; Shepparton Formation) (GS8f)	groundwater in the Shepparton Formation	244.1	244.1
8	Goulburn-Murray: Victorian Riverine Sedimentary Plain (deep; Calivil and Renmark Formations) (GS8f)	groundwater in: (a) the Calivil Formation; and (b) the Renmark Group	175.0	127.0
Wimmera-Mallee (groundwater) water resource plan area (GW3)				
9	Wimmera-Mallee: West Wimmera (Loxton Parilla Sands) (GS9a)	groundwater in the Loxton Parilla Sands	0	22.1
10	Wimmera-Mallee: West Wimmera (Murray Group Limestone) (GS9a)	groundwater in the Murray Group Limestone	25.5	25.5
11	Wimmera-Mallee: West Wimmera (Tertiary Confined Sands) (GS9a)	groundwater in the Tertiary Confined Sands	4.00	4.00

Schedule 4—Matters relating to groundwater SDL resource units

	Column 1	Column 2	Column 3	Column 4
Item	Groundwater SDL resource unit (code)	Groundwater covered by groundwater SDL resource unit	BDL for the SDL resource unit in gegalitres (GL) per year	Long-term average sustainable diversion limit for SDL resource unit in gegalitres (GL) per year
12	Wimmera-Mallee: Wimmera–Avoca Highlands (GS9b)	all groundwater	1.26	3.02
13	Wimmera-Mallee: Wimmera–Mallee Border Zone (Loxton Parilla Sands) (GS9c)	groundwater in the Loxton Parilla Sands	0	9.37
14	Wimmera-Mallee: Wimmera–Mallee Border Zone (Murray Group Limestone) (GS9c)	groundwater in the Murray Group Limestone	14.1	14.1
15	Wimmera-Mallee: Wimmera–Mallee Border Zone (Tertiary Confined Sand Aquifer) (GS9c)	groundwater in the Tertiary Confined Sands	1.1	1.1
16	Wimmera-Mallee: Wimmera–Mallee Sedimentary Plain (GS9d)	all groundwater	24.2	236.2
South Australia				
South Australian Murray water resource plan area (GW4)				
17	Mallee (Pliocene Sands) (GS3)	groundwater in Pliocene sands	0	82.8
18	Mallee (Murray Group Limestone) (GS3)	groundwater in the Murray Group Limestone	65.7	65.7
19	Mallee (Renmark Group) (GS3)	groundwater in the Renmark Group	0	2.00

Schedule 4—Matters relating to groundwater SDL resource units

	Column 1	Column 2	Column 3	Column 4
Item	Groundwater SDL resource unit (code)	Groundwater covered by groundwater SDL resource unit	BDL for the SDL resource unit in gigalitres (GL) per year	Long-term average sustainable diversion limit for SDL resource unit in gigalitres (GL) per year
20	Peake–Roby–Sherlock (unconfined) (GS5)	groundwater in: (a) the unconfined Murray Group Limestone comprising the Coomandook and Bridgewater Formations; and (b) the unconfined Quaternary limestone	3.41	3.41
21	Peake–Roby–Sherlock (confined) (GS5)	groundwater in: (a) the confined Renmark Group; and (b) the confined Buccleuch Group	2.58	2.58
22	SA Murray (GS6)	all groundwater	1.80	127.8
23	SA Murray Salt Interception Schemes (GS7)	all groundwater	11.1	28.6
Eastern Mount Lofty Ranges water resource plan area (GW5)				
24	Angas Bremer (Quaternary Sediments) (GS1)	groundwater in Quaternary sediments	0	2.18
25	Angas Bremer (Murray Group Limestone) (GS1)	groundwater in the Murray Group Limestone	6.57	6.57
26	Eastern Mount Lofty Ranges (GS2)	all groundwater	34.7	38.5
27	Marne Saunders (Fractured Rock) (GS4)	groundwater in fractured rock	2.09	2.09

Schedule 4—Matters relating to groundwater SDL resource units

	Column 1	Column 2	Column 3	Column 4
Item	Groundwater SDL resource unit (code)	Groundwater covered by groundwater SDL resource unit	BDL for the SDL resource unit in gigalitres (GL) per year	Long-term average sustainable diversion limit for SDL resource unit in gigalitres (GL) per year
28	Marne Saunders (Murray Group Limestone) (GS4)	groundwater in: (a) the Murray Group Limestone; and (b) Quaternary sediments	2.38	2.38
29	Marne Saunders (Renmark Group) (GS4)	groundwater in the Renmark Group	0.50	0.50
New South Wales				
Western Porous Rock water resource plan area (GW6)				
30	Western Porous Rock (GS54)*	all groundwater	48.7	225.9
Darling Alluvium water resource plan area (GW7)				
31	Upper Darling Alluvium (GS46)*	all groundwater	6.72	7.10
32	Lower Darling Alluvium (GS28)*	all groundwater	1.78	1.78
Murray Alluvium water resource plan area (GW8)				
33	Billabong Creek Alluvium (GS13)*	all groundwater	7.50	7.50
34	Lower Murray Alluvium (shallow; Shepparton Formation) (GS32)	groundwater in unconsolidated alluvium, including the Shepparton Formation, less than 12 meters below the surface	81.9	81.9
35	Lower Murray Alluvium (deep; Renmark Group and Calivil Formation) (GS32)	all groundwater not covered by the Lower Murray Alluvium (shallow; Shepparton Formation) SDL resource unit	88.8	88.8

Schedule 4—Matters relating to groundwater SDL resource units

	Column 1	Column 2	Column 3	Column 4
Item	Groundwater SDL resource unit (code)	Groundwater covered by groundwater SDL resource unit	BDL for the SDL resource unit in gegalitres (GL) per year	Long-term average sustainable diversion limit for SDL resource unit in gegalitres (GL) per year
36	Upper Murray Alluvium (GS50)*	all groundwater	14.1	14.1
37	Oaklands Basin (GS71)	groundwater in the Oaklands Basin	0	2.5
Murrumbidgee Alluvium water resource plan area (GW9)				
38	Lake George Alluvium (GS26)*	all groundwater	1.30	1.30
39	Lower Murrumbidgee Alluvium (shallow; Shepparton Formation) (GS33)	groundwater in unconsolidated alluvium including the Shepparton Formation to a depth of 40 meters or the bottom of the Shepparton Formation, whichever is the deeper	26.9	26.9
40	Lower Murrumbidgee Alluvium (deep; Calivil Formation and Renmark Group) (GS33)	all groundwater not covered by Lower Murrumbidgee Alluvium (shallow; Shepparton Formation) SDL resource unit	273.6	273.6
41	Mid-Murrumbidgee Alluvium (GS36)*	all groundwater	48.1	48.1

Schedule 4—Matters relating to groundwater SDL resource units

	Column 1	Column 2	Column 3	Column 4
Item	Groundwater SDL resource unit (code)	Groundwater covered by groundwater SDL resource unit	BDL for the SDL resource unit in giganlitres (GL) per year	Long-term average sustainable diversion limit for SDL resource unit in giganlitres (GL) per year
Lachlan Alluvium water resource plan area (GW10)				
42	Belubula Alluvium (GS12)*	all groundwater	2.90	2.90
43	Lower Lachlan Alluvium (GS30)	all groundwater	123.4 ¹	117.0
44	Upper Lachlan Alluvium (GS48)*	all groundwater	94.1	94.1
Lachlan and South Western Fractured Rock water resource plan area (GW11)				
45	Adelaide Fold Belt (GS10)*	all groundwater	3.61	5.25
46	Kanmantoo Fold Belt (GS20)*	all groundwater	8.91	28.5
47	Lachlan Fold Belt: Lachlan (GS21)*	all groundwater	36.9	123.6
48	Lachlan Fold Belt: Macquarie–Castlereagh (GS22)*	all groundwater	51.2	89.3
49	Lachlan Fold Belt: Murray (GS23)*	all groundwater	14.3	31.9
50	Lachlan Fold Belt: Murrumbidgee (GS24)*	all groundwater	26.3	133.4
51	Lachlan Fold Belt: Western (GS25)*	all groundwater	13.7	230.6

¹ The *Water Sharing Plan for the Lower Lachlan Groundwater Source 2003* (NSW) will reduce the long-term average limit to 117 GL by June 2018.

Schedule 4—Matters relating to groundwater SDL resource units

	Column 1	Column 2	Column 3	Column 4
Item	Groundwater SDL resource unit (code)	Groundwater covered by groundwater SDL resource unit	BDL for the SDL resource unit in giganlitres (GL) per year	Long-term average sustainable diversion limit for SDL resource unit in giganlitres (GL) per year
52	Orange Basalt (GS44)*	groundwater in: (a) the Canobolas Volcanic Complex; and (b) unconsolidated alluvium overlying the Canobolas Volcanic Complex	10.7	10.7
53	Young Granite (GS55)*	groundwater in: (a) the Young Granodiorite; and (b) unconsolidated alluvium overlying the Young Granodiorite	7.09	7.09
Macquarie-Castlereagh Alluvium water resource plan area (GW12)				
54	Bell Valley Alluvium (GS11)*	all groundwater	2.21	2.21
55	Castlereagh Alluvium (GS14)*	groundwater in unconsolidated alluvium	0.63	0.63
56	Collaburragundry–Talbragar Alluvium (GS15)*	groundwater in unconsolidated alluvium	2.76	2.76
57	Cudgegong Alluvium (GS16)*	all groundwater	2.54	2.54

Schedule 4—Matters relating to groundwater SDL resource units

	Column 1	Column 2	Column 3	Column 4
Item	Groundwater SDL resource unit (code)	Groundwater covered by groundwater SDL resource unit	BDL for the SDL resource unit in gigalitres (GL) per year	Long-term average sustainable diversion limit for SDL resource unit in gigalitres (GL) per year
58	Lower Macquarie Alluvium (GS31)	groundwater in the unconsolidated alluvial sediments	70.7 GL minus the portion of the limit under the <i>Water Sharing Plan for the Lower Macquarie Groundwater Sources 2003</i> of New South Wales that applies to water taken from the Jurassic Sandstone of the Great Artesian Basin	70.7 GL minus the portion of the limit under the Water Sharing Plan for the Lower Macquarie Groundwater Sources 2003 of New South Wales that applies to water taken from the Jurassic Sandstone of the Great Artesian Basin
59	Upper Macquarie Alluvium (GS49)*	all groundwater excluding groundwater in the Gunnedah-Oxley Basin	18.0	18.0
New South Wales Sediments above GAB water resource plan area (GW13)				
60	NSW Sediments above the Great Artesian Basin (GS40)*	groundwater in consolidated and semi consolidated sediments of the Rolling Downs Group that overlie the Great Artesian Basin	0.92	80.0
New South Wales Alluvium above GAB water resource plan area (GW14)				
61	NSW Alluvium above the Great Artesian Basin (GS37)*	groundwater in (a) unconsolidated alluvium; and (b) consolidated and semi consolidated sediments of the Rolling Downs Group that overlie the Great Artesian Basin	1.28	22.5

Schedule 4—Matters relating to groundwater SDL resource units

	Column 1	Column 2	Column 3	Column 4
Item	Groundwater SDL resource unit (code)	Groundwater covered by groundwater SDL resource unit	BDL for the SDL resource unit in gegalitres (GL) per year	Long-term average sustainable diversion limit for SDL resource unit in gegalitres (GL) per year
Namoi Alluvium water resource plan area (GW15)				
62	Lower Namoi Alluvium (GS34)	groundwater in unconsolidated alluvium associated with the Namoi River and its tributaries including: (a) the Narrabri Formation; and (b) the Gunnedah Formation; and (c) the Cubbaroo Formation	88.3	88.3
63	Manilla Alluvium (GS35)	all groundwater	0.42	0.42
64	Peel Valley Alluvium (GS45)	all groundwater	9.34	9.34
65	Upper Namoi Alluvium (GS51)	(a) groundwater in unconsolidated alluvium associated with the Namoi River and its tributaries including: (i) the Narrabri Formation; and (ii) the Gunnedah Formation; and (b) all other groundwater excluding groundwater in the Gunnedah-Oxley Basin	123.4	123.4
66	Upper Namoi Tributary Alluvium (GS52)	all groundwater excluding groundwater in the Gunnedah-Oxley Basin	0.37	0.37

Schedule 4—Matters relating to groundwater SDL resource units

	Column 1	Column 2	Column 3	Column 4
Item	Groundwater SDL resource unit (code)	Groundwater covered by groundwater SDL resource unit	BDL for the SDL resource unit in giganlitres (GL) per year	Long-term average sustainable diversion limit for SDL resource unit in giganlitres (GL) per year
Gwydir Alluvium water resource plan area (GW16)				
67	Lower Gwydir Alluvium (GS29)	groundwater in unconsolidated alluvium associated with the Gwydir River and its tributaries including: (a) the Narrabri Formation; and (b) the Gunnedah Formation	32.9	32.9
68	Upper Gwydir Alluvium (GS47)*	all groundwater	0.72	0.72
Eastern Porous Rock water resource plan area (GW17)				
69	Eastern Porous Rock: Macquarie–Castlereagh (GS17)*	groundwater in the Gunnedah-Oxley Basin to a depth of 200 metres	6.2	13.4
70	Eastern Porous Rock: Namoi–Gwydir (GS18)*	groundwater in the Gunnedah-Oxley Basin to a depth of 200 metres	15.5	15.5
71	Gunnedah-Oxley Basin (GS70)	Groundwater in the Gunnedah-Oxley Basin excluding groundwater in items 69 and 70 of this table	0	300.0

Schedule 4—Matters relating to groundwater SDL resource units

	Column 1	Column 2	Column 3	Column 4
Item	Groundwater SDL resource unit (code)	Groundwater covered by groundwater SDL resource unit	BDL for the SDL resource unit in giganlitres (GL) per year	Long-term average sustainable diversion limit for SDL resource unit in giganlitres (GL) per year
New England Fractured Rock and Northern Basalts water resource plan area (GW18)				
72	Inverell Basalt (GS19)*	groundwater in: (a) fractured rock aquifers; and (b) unconsolidated alluvium overlying fractured rock aquifers	4.15	4.15
73	Liverpool Ranges Basalt (GS27)*	groundwater in: (a) the Liverpool Ranges Basalt; and (b) unconsolidated alluvium overlying the Liverpool Ranges Basalt	2.16	2.16
74	New England Fold Belt: Border Rivers (GS41)*	all groundwater	6.31	15.3
75	New England Fold Belt: Gwydir (GS42)*	all groundwater	6.45	22.2
76	New England Fold Belt: Namoi (GS43)*	all groundwater	18.3	39.4
77	Warrumbungle Basalt (GS53)*	groundwater in: (a) the Warrumbungle Basalt; and (b) unconsolidated alluvium overlying the Warrumbungle Basalt	0.55	0.55
New South Wales Border Rivers Alluvium water resource plan area (GW19)				
78	NSW Border Rivers Alluvium (GS38)*	all groundwater	8.39	8.39

Schedule 4—Matters relating to groundwater SDL resource units

	Column 1	Column 2	Column 3	Column 4
Item	Groundwater SDL resource unit (code)	Groundwater covered by groundwater SDL resource unit	BDL for the SDL resource unit in gegalitres (GL) per year	Long-term average sustainable diversion limit for SDL resource unit in gegalitres (GL) per year
79	NSW Border Rivers Tributary Alluvium (GS39)	all groundwater	1.73	1.73
Queensland				
Queensland Border Rivers water resource plan area (GW20)				
80	Queensland Border Rivers Alluvium (GS58)	all groundwater in aquifers above the Great Artesian Basin	13.8	13.8
81	Queensland Border Rivers Fractured Rock (GS59)	all groundwater in aquifers above the Great Artesian Basin	10.1	11.0
82	Sediments above the Great Artesian Basin: Border Rivers (GS60)	all groundwater in aquifers above the Great Artesian Basin	0.04	28.7
Moonie water resource plan area (GW21)				
83	Sediments above the Great Artesian Basin: Moonie (GS62)	all groundwater in aquifers above the Great Artesian Basin	0.10	64.9
84	St George Alluvium: Moonie (GS65)	groundwater in the St George Alluvium	0.01	1.37
Condamine-Balonne water resource plan area (GW22)				
85	Condamine Fractured Rock (GS57)	all groundwater in aquifers above the Great Artesian Basin	0.81	2.14
86	Sediments above the Great Artesian Basin: Condamine–Balonne (GS61)	all groundwater in aquifers above the Great Artesian Basin	0.66	35.6

Schedule 4—Matters relating to groundwater SDL resource units

	Column 1	Column 2	Column 3	Column 4
Item	Groundwater SDL resource unit (code)	Groundwater covered by groundwater SDL resource unit	BDL for the SDL resource unit in gegalitres (GL) per year	Long-term average sustainable diversion limit for SDL resource unit in gegalitres (GL) per year
87	St George Alluvium: Condamine–Balonne (shallow) (GS64)	groundwater in the St George alluvium excluding groundwater covered by the St George Alluvium: Condamine-Balonne (deep) SDL resource unit	0.77	54.6
88	St George Alluvium: Condamine–Balonne (deep) (GS64)	groundwater in the lower part of the St George Alluvium occupying the Dirranbandi Trough that lies below the middle leaky confined bed	12.6	12.6
89	Upper Condamine Basalts (GS68)	all groundwater in aquifers above the Great Artesian Basin	79.0	79.0
90	Upper Condamine Alluvium (Central Condamine Alluvium) (GS67a)	all groundwater in aquifers above the Great Artesian Basin	81.4	46.0
91	Upper Condamine Alluvium (Tributaries) (GS67b)	all groundwater in aquifers above the Great Artesian Basin	45.5	40.5
Warrego-Paroo-Nebine water resource plan area (GW23)				
92	Sediments above the Great Artesian Basin: Warrego–Paroo–Nebine (GS63)	all groundwater in aquifers above the Great Artesian Basin	1.21	197.1
93	St George Alluvium: Warrego–Paroo–Nebine (GS66)	groundwater in the St George Alluvium	0.12	49.1

Schedule 4—Matters relating to groundwater SDL resource units

	Column 1	Column 2	Column 3	Column 4
Item	Groundwater SDL resource unit (code)	Groundwater covered by groundwater SDL resource unit	BDL for the SDL resource unit in gegalitres (GL) per year	Long-term average sustainable diversion limit for SDL resource unit in gegalitres (GL) per year
94	Warrego Alluvium (GS69)	all groundwater in aquifers above the Great Artesian Basin	0.70	19.8

Note: Where an SDL resource unit is marked with an *, it is anticipated that before the Basin Plan commences an interim water resource plan will be in place which will cover that SDL resource unit.

Schedule 5—Criteria for identifying an environmental asset

Note: See section 7.27.

Item	Criteria
<i>Criterion 1: The water-dependent ecosystem is formally recognised in international agreements or, with environmental watering, is capable of supporting species listed in those agreements</i>	
1	<p>Assessment indicator: A water-dependent ecosystem is an environmental asset that requires environmental watering if it is:</p> <ul style="list-style-type: none"> (a) a declared Ramsar wetland; or (b) with environmental watering, capable of supporting a species listed in or under the JAMBA, CAMBA, ROKAMBA or the Bonn Convention.
<i>Criterion 2: The water-dependent ecosystem is natural or near-natural, rare or unique</i>	
2	<p>Assessment indicator: A water-dependent ecosystem is an environmental asset that requires environmental watering if it:</p> <ul style="list-style-type: none"> (a) represents a natural or near-natural example of a particular type of water-dependent ecosystem as evidenced by a relative lack of post-1788 human induced hydrologic disturbance or adverse impacts on ecological character; or (b) represents the only example of a particular type of water-dependent ecosystem in the Murray-Darling Basin; or (c) represents a rare example of a particular type of water-dependent ecosystem in the Murray-Darling Basin.
<i>Criterion 3: The water-dependent ecosystem provides vital habitat</i>	
3	<p>Assessment indicator: A water-dependent ecosystem is an environmental asset that requires environmental watering if it:</p> <ul style="list-style-type: none"> (a) provides vital habitat, including: <ul style="list-style-type: none"> (i) a refugium for native water-dependent biota during dry spells and drought; or (ii) pathways for the dispersal, migration and movements of native water-dependent biota; or (iii) important feeding, breeding and nursery sites for native water-dependent biota; or (b) is essential for maintaining, and preventing declines of, native water-dependent biota.
<i>Criterion 4: Water-dependent ecosystems that support Commonwealth, State or Territory listed threatened species or communities</i>	
4	<p>Assessment indicator: A water-dependent ecosystem is an environmental asset that requires environmental watering if it:</p> <ul style="list-style-type: none"> (a) supports a listed threatened ecological community or listed threatened species; or

Schedule 5—Criteria for identifying an environmental asset

	<p>Note: See the definitions of <i>listed threatened ecological community</i> and <i>listed threatened species</i> in section 1.07.</p> <p>(b) supports water-dependent ecosystems treated as threatened or endangered (however described) under State or Territory law; or</p> <p>(c) supports one or more native water-dependent species treated as threatened or endangered (however described) under State or Territory law.</p>
<p><i>Criterion 5: The water-dependent ecosystem supports, or with environmental watering is capable of supporting, significant biodiversity</i></p>	
5	<p>Assessment indicator: A water-dependent ecosystem is an environmental asset that requires environmental watering if it supports, or with environmental watering is capable of supporting, significant biological diversity. This includes a water-dependent ecosystem that:</p> <p>(a) supports, or with environmental watering is capable of supporting, significant numbers of individuals of native water-dependent species; or</p> <p>(b) supports, or with environmental watering is capable of supporting, significant levels of native biodiversity at the genus or family taxonomic level, or at the ecological community level.</p>

Schedule 6—Criteria for identifying an ecosystem function

Note: See section 7.28.

Item	Criteria
<i>Criterion 1: The ecosystem function supports the creation and maintenance of vital habitats and populations</i>	
1	<p>Assessment indicator: An ecosystem function requires environmental watering to sustain it if it provides vital habitat, including:</p> <ul style="list-style-type: none"> (a) a refugium for native water-dependent biota during dry periods and drought; or (b) pathways for the dispersal, migration and movement of native water-dependent biota; or (c) a diversity of important feeding, breeding and nursery sites for native water-dependent biota; or (d) a diversity of aquatic environments including pools, riffle and run environments; or (e) a vital habitat that is essential for preventing the decline of native water-dependent biota.
<i>Criterion 2: The ecosystem function supports the transportation and dilution of nutrients, organic matter and sediment</i>	
2	<p>Assessment indicator: An ecosystem function requires environmental watering to sustain it if it provides for the transportation and dilution of nutrients, organic matter and sediment, including:</p> <ul style="list-style-type: none"> (a) pathways for the dispersal and movement of organic and inorganic sediment, delivery to downstream reaches and to the ocean, and to and from the floodplain; or (b) the dilution of carbon and nutrients from the floodplain to the river systems.
<i>Criterion 3: The ecosystem function provides connections along a watercourse (longitudinal connections)</i>	
3	<p>Assessment indicator: An ecosystem function requires environmental watering to sustain it if it provides connections along a watercourse or to the ocean, including longitudinal connections:</p> <ul style="list-style-type: none"> (a) for dispersal and re-colonisation of native water-dependent communities; or (b) for migration to fulfil requirements of life-history stages; or (c) for in-stream primary production.
<i>Criterion 4: The ecosystem function provides connections across floodplains, adjacent wetlands and billabongs (lateral connections)</i>	
4	<p>Assessment indicator: An ecosystem function requires environmental watering to sustain it if it provides connections across floodplains, adjacent wetlands and billabongs, including:</p> <ul style="list-style-type: none"> (a) lateral connections for foraging, migration and re-colonisation of native water-dependent species and communities; or (b) lateral connections for off-stream primary production.

Schedule 7—Targets to measure progress towards objectives

Note: See Part 3 of Chapter 7.

Targets to measure progress towards the overall environmental objectives for water-dependent ecosystems

Intermediate targets up to 30 June 2019

- (1) There is no loss of, or degradation in, the following:
- (a) flow regimes which include relevant flow components set out in paragraph 7.29(1)(b);
 - (b) hydrologic connectivity between the river and floodplain and between hydrologically connected valleys;
 - (c) floodplain and wetland types including the condition of priority environmental assets and priority ecosystem functions;
Note: See sections 1.07 for the meaning of the terms **priority environmental asset** and **priority ecosystem function**.
 - (d) condition of the Coorong and Lower Lakes ecosystems and Murray Mouth opening regime;
 - (e) condition and diversity of native water-dependent vegetation;
 - (f) recruitment and populations of native, water-dependent species including vegetation, birds, fish and macroinvertebrates.

Longer term targets from 1 July 2019

- (2) There are improvements in the following:
- (a) flow regimes which include relevant flow components set out in paragraph 7.29(1)(b);
Note: The improvements in flow regimes will be measured by progress towards natural flow regimes, having regard to long-term watering plans.
 - (b) hydrologic connectivity between the river and floodplain and between hydrologically connected valleys;
 - (c) floodplain and wetland types including the condition of priority environmental assets and priority ecosystem functions;
 - (d) condition of the Coorong and Lower Lakes ecosystems and Murray Mouth opening regime;
 - (e) condition and diversity of native water-dependent vegetation;
 - (f) recruitment and populations of native water-dependent species, including vegetation, birds, fish and macroinvertebrates;
 - (g) the community structure of water-dependent ecosystems.

Schedule 8—Key causes of water quality degradation

Note: See section 8.02.

Item	Type of water quality degradation	Key causes of water quality degradation for that type
1	Elevated levels of salinity	<p>(1) The process of mobilisation of salt stores in the landscape and geological predisposition to salinity development, including by:</p> <ul style="list-style-type: none"> (a) the following processes and activities relating to water flow or water management: <ul style="list-style-type: none"> (i) saline groundwater and surface water discharges into surface water systems; (ii) increased deep drainage below irrigated agricultural land displacing saline groundwater to surface water systems; (iii) saline surface and shallow groundwater drainage from irrigated agricultural land into surface water systems; (iv) irrigation at high salinity risk locations without adequate drainage management; Example: Locations where there is a high risk of recharge to groundwater resulting in saline discharges to surface waters. (v) de-watering of saline groundwater which mobilises salt into surface water systems; (vi) reduction in stream flows, limiting the dilution of salinity; (b) land management practices involving the replacement of deep-rooted vegetation with shallow-rooted crops and pastures, resulting in increased rainfall recharge displacing saline groundwater to surface water systems. <p>(2) The use of groundwater for irrigation purposes at locations where highly saline upper aquifer water drains to the lower aquifer.</p> <p>(3) With respect to soil degradation, the use of water with a high ratio of sodium to calcium and magnesium for irrigation.</p>

Item	Type of water quality degradation	Key causes of water quality degradation for that type
2	Elevated levels of suspended matter	<p>The failure to prevent sediments from entering Basin water resources, which is contributed to by:</p> <ul style="list-style-type: none"> (a) the following land management practices: <ul style="list-style-type: none"> (i) inappropriate frequency, timing and location of cultivation; <p>Example: Cultivation taking place at times of the year when the risk of erosion is high (e.g. during the high rainfall season), excessive frequency of cultivation, and cultivation of steep slopes.</p> (ii) overgrazing of catchments and grazing of riverbanks and floodplains; <p>Example: The riparian zone along watercourses kept in permanent vegetation can effectively mitigate the movement of sediment within farmlands and from farmlands.</p> (iii) poor soil conservation practices; <p>Example: Practices that fail to use management strategies that prevent soil erosion, acidification, salinisation or other chemical soil contamination, or fail to adopt proven soil conservation technologies such as the construction of contour banks.</p> (iv) practices that over the long-term cause decline of stream morphology, leading to near stream processes of gully erosion, side wall cut and head migration; and (b) the following water management practices: <ul style="list-style-type: none"> (i) rapid drawdown of water within a surface water resource; <p>Example: Rapid drawdown of water in a dam.</p> (ii) the volume or manner of release of water, resulting in back or bed erosion; and (c) wave wash (for example, that caused by speedboats).
3	Elevated levels of nutrients	<p>The failure to prevent nutrients from entering Basin water resources through both point and diffuse sources. The key sources of nutrients are:</p> <ul style="list-style-type: none"> (a) soil and organic matter; (b) animal waste; (c) fertilisers; (d) sewage and industrial discharges; (e) nutrients from water storages released as a result of storage management practices.

Item	Type of water quality degradation	Key causes of water quality degradation for that type
4	Elevated levels of cyanobacteria cell counts or biovolume and toxins and odour compounds	<p>The interaction of the following factors:</p> <ul style="list-style-type: none"> (a) a water body with little or no flow; (b) stratification in the water body; (c) sunlight; (d) the availability of phosphorus and nitrogen in the water; (e) seeding from up-stream (although cyanobacteria blooms may occur without this factor).
5	Water temperature outside natural ranges	<ul style="list-style-type: none"> (1) The key cause of water temperature of Basin water resources below natural ranges is the release of stored water from below the thermocline from large water storages in spring, summer and autumn. (2) The key causes of water temperature of Basin water resources above natural ranges are the following: <ul style="list-style-type: none"> (a) the release of stored water from large water storages in winter; (b) the removal of shading riparian vegetation; (c) reduced flow.
6	Dissolved oxygen outside natural ranges	<ul style="list-style-type: none"> (1) Micro-organisms consuming organic matter and depleting oxygen at a rate faster than it can be replenished. Example: This can arise when there is a discharge from sewage treatment plants or the flushing of natural organic material from the floodplain. (2) Bottom release from, or overturn within, a stratified water storage. (3) Eutrophication leading to excessive plant growth causing high diurnal variations in dissolved oxygen levels, both above and below natural ranges.
7	Elevated levels of pesticides and other contaminants	<p>Poor management practices including the following:</p> <ul style="list-style-type: none"> (a) pesticide spray drift; (b) allowing pesticides or other contaminants into surface water runoff; (c) allowing pesticides or other contaminants to leach into groundwater; (d) allowing erosion of contaminated soil; (e) inappropriate disposal of pesticides; (f) inappropriate disposal and management of industrial and other waste (including from mining and coal-seam gas extraction).

Schedule 8—Key causes of water quality degradation

Item	Type of water quality degradation	Key causes of water quality degradation for that type
8	pH outside natural ranges	<p>(1) The exposure to the air of soils containing iron sulfide minerals.</p> <p>Note: When iron sulfide minerals are exposed to air natural oxidation processes can result in the release of acid, which can be flushed into Basin water resources.</p> <p>(2) Agricultural practices that lead to the acidification of soils.</p> <p>(3) Eutrophication leading to excessive plant growth causing high diurnal variation in pH.</p>
9	Elevated pathogen counts	<p>Failure to prevent pathogens from entering Basin water resources through both point and diffuse sources. The key sources of pathogens are:</p> <p>(a) human and animal waste; and</p> <p>(b) sewage discharges.</p>

Schedule 9—Target values for target application zones

Note: See section 8.12.

Target application zones (Target assessment)	Water-dependent ecosystem	Ecosystem Type	Turbidity (NTU) (Annual median)	Total Phosphorus (µg/L) (Annual median)	Total Nitrogen (µg/L) (Annual median)	Dissolved oxygen (mg/L; or saturation (%)) (Annual median within the range)	pH (Annual median within the range)	Salinity (mg/L)	Temperature (Monthly median within the range)	Pesticides and other contaminants (values in table 3.4.1 of the ANZECC Guidelines for) (Must not be exceeded)
B1 (Condamine and Warrego valleys; Upland zone)	Declared Ramsar wetlands	Riverine	40	200	1350	>5.0 mg/L; or 60 – 110%	6.5 - 8.0		between the 20%ile and the 80%ile of natural monthly water temperature	the protection of 99% of species
		Non-riverine with permanent water	100	25	1000	90 - 110%	6.5-9.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
	Other water-dependent ecosystems	Riverine and non-riverine	270	450	2000	60-110%	7.0-8.5		between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems
A1 (Condamine, Paroo and Warrego valleys; Lowland zone)	Declared Ramsar wetlands	Riverine	450	220	890	>5.0 mg/L; or 60 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
		Non-riverine with permanent water	100	25	1000	90 - 110%	6.5-9.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species

Schedule 9— Target values for target application zones

Target application zones (Target assessment)	Water-dependent ecosystem	Ecosystem Type	Turbidity (NTU) (Annual median)	Total Phosphorus (µg/L) (Annual median)	Total Nitrogen (µg/L) (Annual median)	Dissolved oxygen (mg/L; or saturation (%)) (Annual median within the range)	pH (Annual median within the range)	Salinity (mg/L)	Temperature (Monthly median within the range)	Pesticides and other contaminants (values in table 3.4.1 of the ANZECC Guidelines for) (Must not be exceeded)
	Other water-dependent ecosystems	Riverine and non-riverine	700	300	1000	>5.0 mg/L; or 60 – 110%	6.5 - 8.0	End-of-Valley targets for salinity in Appendix 1 of Schedule B to the Agreement	between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems
B2 (Border Rivers, Gwydir and Namoi valleys; Upland zone)	Declared Ramsar wetlands	Riverine	15	45	490	90 - 110%	7.5-8.5		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
	Other water-dependent ecosystems	Riverine and non-riverine	30	80	750	60 - 110%	7.5-8.5		between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems
A2 (Border Rivers, Gwydir, and Namoi valleys; Lowland zone)	Declared Ramsar wetlands	Riverine	75	130	890	>5.0 mg/L; or 65 – 110%	7.0 – 8.3		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species

Schedule 9— Target values for target application zones

Target application zones (Target assessment)	Water-dependent ecosystem	Ecosystem Type	Turbidity (NTU) (Annual median)	Total Phosphorus (µg/L) (Annual median)	Total Nitrogen (µg/L) (Annual median)	Dissolved oxygen (mg/L; or saturation (%)) (Annual median within the range)	pH (Annual median within the range)	Salinity (mg/L)	Temperature (Monthly median within the range)	Pesticides and other contaminants (values in table 3.4.1 of the ANZECC Guidelines for) (Must not be exceeded)
	Other water-dependent ecosystems	Riverine and non-riverine	200	200	1000	>5.0 mg/L; or 65 – 110%	7.0 – 8.3	End-of-Valley targets for salinity in Appendix 1 of Schedule B to the Agreement	between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems
C2 (Border Rivers, Gwydir, and Namoi valleys; Montane zone)	Declared Ramsar wetlands	Riverine	25	20	250	90-110%	6.5-7.5		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
	Other water-dependent ecosystems	Riverine and non-riverine	25	20	250	90-110%	6.5-7.5		between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems
Dml (Darling valley; Middle and lower zones)	Declared Ramsar wetlands	Riverine	50	50	500	85 – 110%	6.5 – 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species

Schedule 9— Target values for target application zones

Target application zones (Target assessment)	Water-dependent ecosystem	Ecosystem Type	Turbidity (NTU) (Annual median)	Total Phosphorus (µg/L) (Annual median)	Total Nitrogen (µg/L) (Annual median)	Dissolved oxygen (mg/L; or saturation (%)) (Annual median within the range)	pH (Annual median within the range)	Salinity (mg/L)	Temperature (Monthly median within the range)	Pesticides and other contaminants (values in table 3.4.1 of the ANZECC Guidelines for) (Must not be exceeded)
	Other water-dependent ecosystems	Riverine and non-riverine	50	50	500	85 – 110%	6.5 – 8.0	End-of-Valley targets for salinity in Appendix 1 of Schedule B to the Agreement	between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems
B3 (Castlereagh, Macquarie, Lachlan and Murrumbidgee valleys; Upland zone)	Declared Ramsar wetlands	Riverine	5	20	310	>8 mg/L; or 90-110%	7.0-8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
	Other water-dependent ecosystems	Riverine and non-riverine	20	35	600	>8 mg/L; or 90-110%	7.0-8.0		between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems
A3 (Castlereagh, Macquarie, Lachlan and Murrumbidgee valleys; Lowland zone)	Declared Ramsar wetlands	Riverine	20	30	320	>7.0 mg/L; or 80-110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species

Schedule 9— Target values for target application zones

Target application zones (Target assessment)	Water-dependent ecosystem	Ecosystem Type	Turbidity (NTU) (Annual median)	Total Phosphorus (µg/L) (Annual median)	Total Nitrogen (µg/L) (Annual median)	Dissolved oxygen (mg/L; or saturation (%)) (Annual median within the range)	pH (Annual median within the range)	Salinity (mg/L)	Temperature (Monthly median within the range)	Pesticides and other contaminants (values in table 3.4.1 of the ANZECC Guidelines for) (Must not be exceeded)
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
	Other water-dependent ecosystems	Riverine and non-riverine	35	50	600	>7.0 mg/L; or 80-110%	6.5 - 8.0	End-of-Valley targets for salinity in Appendix 1 of Schedule B to the Agreement	between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems
Du (Darling; Upper zone)	Declared Ramsar wetlands	Riverine	95	150	480	>7 mg/L; or 80-110%	7.0-8.1		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
	Other water-dependent ecosystems	Riverine and non-riverine	230	250	900	>7 mg/L; or 80-110%	7.0-8.1		between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems
C3 (Lachlan and Murrumbidgee valleys Montane zone)	Declared Ramsar wetlands	Riverine	5	20	250	>8.5 mg/L; or 90-110%	6.5-7.5		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species

Schedule 9— Target values for target application zones

Target application zones (Target assessment)	Water-dependent ecosystem	Ecosystem Type	Turbidity (NTU) (Annual median)	Total Phosphorus (µg/L) (Annual median)	Total Nitrogen (µg/L) (Annual median)	Dissolved oxygen (mg/L; or saturation (%)) (Annual median within the range)	pH (Annual median within the range)	Salinity (mg/L)	Temperature (Monthly median within the range)	Pesticides and other contaminants (values in table 3.4.1 of the ANZECC Guidelines for) (Must not be exceeded)
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
	Other water-dependent ecosystems	Riverine and non-riverine	10	20	250	>8.5 mg/L; or 90-110%	6.5-7.5		between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems
cMum (Murray Valley Central; Upper and Middle zones)	Declared Ramsar wetlands	Riverine	15	40	500	>7.7 mg/L; 90 – 110%	6.5 – 7.5		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
	Other water-dependent ecosystems	Riverine and non-riverine	15	40	500	>7.7 mg/L; 90 – 110%	6.5 – 7.5	End-of-Valley targets for salinity in Appendix 1 of Schedule B to the Agreement	between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems

Schedule 9— Target values for target application zones

Target application zones (Target assessment)	Water-dependent ecosystem	Ecosystem Type	Turbidity (NTU) (Annual median)	Total Phosphorus (µg/L) (Annual median)	Total Nitrogen (µg/L) (Annual median)	Dissolved oxygen (mg/L; or saturation (%)) (Annual median within the range)	pH (Annual median within the range)	Salinity (mg/L)	Temperature (Monthly median within the range)	Pesticides and other contaminants (values in table 3.4.1 of the ANZECC Guidelines for) (Must not be exceeded)
B4 (Avoca, Wimmera, Loddon and Campaspe valleys; Upland zone)	Declared Ramsar wetlands	Riverine	10	25	600	80-110%	6.5 - 8.3		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
		Other water-dependent ecosystems	Riverine and non-riverine	10	25	600	80-110%	6.5 - 8.3		between the 20%ile and 80%ile of natural monthly water temperature
A4 (Avoca, Wimmera, Loddon and Campaspe valleys; Lowland zone)	Declared Ramsar wetlands	Riverine	5	15	320	80-110%	6.5 - 8.3		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species

Schedule 9— Target values for target application zones

Target application zones (Target assessment)	Water-dependent ecosystem	Ecosystem Type	Turbidity (NTU) (Annual median)	Total Phosphorus (µg/L) (Annual median)	Total Nitrogen (µg/L) (Annual median)	Dissolved oxygen (mg/L; or saturation (%)) (Annual median within the range)	pH (Annual median within the range)	Salinity (mg/L)	Temperature (Monthly median within the range)	Pesticides and other contaminants (values in table 3.4.1 of the ANZECC Guidelines for) (Must not be exceeded)
	Other water-dependent ecosystems	Riverine and non-riverine	30	45	900	80-110%	6.5 - 8.3	End-of-Valley targets for salinity in Appendix 1 of Schedule B to the Agreement	between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems
C5 (Ovens valley; Montane zone)	Declared Ramsar wetlands	Riverine	5	25	150	95-110%	6.4-7.7		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
	Other water-dependent ecosystems	Riverine and non-riverine	5	25	150	95-110%	6.4-7.7		between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems
B5 (Broken, Goulburn and Ovens valleys; Upland zones)	Declared Ramsar wetlands	Riverine	5	15	290	>8.0 mg/L; or 90-110%	6.4-7.7		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species

Schedule 9— Target values for target application zones

Target application zones (Target assessment)	Water-dependent ecosystem	Ecosystem Type	Turbidity (NTU) (Annual median)	Total Phosphorus (µg/L) (Annual median)	Total Nitrogen (µg/L) (Annual median)	Dissolved oxygen (mg/L; or saturation (%)) (Annual median within the range)	pH (Annual median within the range)	Salinity (mg/L)	Temperature (Monthly median within the range)	Pesticides and other contaminants (values in table 3.4.1 of the ANZECC Guidelines for) (Must not be exceeded)
	Other water-dependent ecosystems	Riverine and non-riverine	10	30	600	>8.0 mg/L; or 90-110%	6.4-7.7		between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems
A5 (Broken, Goulburn and Ovens valleys; Lowland zone)	Declared Ramsar wetlands	Riverine	10	25	350	>7.5 mg/L; or 85-110%	6.4 - 7.7		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
	Other water-dependent ecosystems	Riverine and non-riverine	30	45	600	>7.5 mg/L; or 85-110%	6.4 - 7.7	End-of-Valley targets for salinity in Appendix 1 of Schedule B to the Agreement	between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems
C6 (Mitta Mitta and Upper Murray; Montane)	Declared Ramsar wetlands	Riverine	5	25	150	>9 mg/L; or 95-110%	6.4 - 7.7		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species

Schedule 9— Target values for target application zones

Target application zones (Target assessment)	Water-dependent ecosystem	Ecosystem Type	Turbidity (NTU) (Annual median)	Total Phosphorus (µg/L) (Annual median)	Total Nitrogen (µg/L) (Annual median)	Dissolved oxygen (mg/L; or saturation (%)) (Annual median within the range)	pH (Annual median within the range)	Salinity (mg/L)	Temperature (Monthly median within the range)	Pesticides and other contaminants (values in table 3.4.1 of the ANZECC Guidelines for) (Must not be exceeded)
	Other water-dependent ecosystems	Riverine and non-riverine	5	25	150	>9 mg/L; or 95-110%	6.4 - 7.7		between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems
B6 (Kiewa, Mitta Mitta and Upper Murray; Upland)	Declared Ramsar wetlands	Riverine	5	20	230	>8.5 mg/L; or 85-110%	6.4 - 7.7		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
	Other water-dependent ecosystems	Riverine and non-riverine	5	30	350	>8.5 mg/L; or 85-110%	6.4 - 7.7		between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems
A6 (Kiewa; Lowland)	Declared Ramsar wetlands	Riverine	5	30	290	>7.5 mg/L; or 85-110%	6.4 – 7.7		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species

Schedule 9— Target values for target application zones

Target application zones (Target assessment)	Water-dependent ecosystem	Ecosystem Type	Turbidity (NTU) (Annual median)	Total Phosphorus (µg/L) (Annual median)	Total Nitrogen (µg/L) (Annual median)	Dissolved oxygen (mg/L; or saturation (%)) (Annual median within the range)	pH (Annual median within the range)	Salinity (mg/L)	Temperature (Monthly median within the range)	Pesticides and other contaminants (values in table 3.4.1 of the ANZECC Guidelines for) (Must not be exceeded)
	Other water-dependent ecosystems	Riverine and non-riverine	10	45	600	>7.5 mg/L; or 85-110%	6.4 – 7.7	End-of-Valley targets for salinity in Appendix 1 of Schedule B to the Agreement	between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems
cMI (Central Murray; Lower)	Declared Ramsar wetlands	Riverine	35	80	700	>8.0 mg/L; or 90-110%	6.8-8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
	Other water-dependent ecosystems	Riverine and non-riverine	35	80	700	>8.0 mg/L; or 90-110%	6.8-8.0	End-of-Valley targets for salinity in Appendix 1 of Schedule B to the Agreement	between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems
IM (Lower Murray)	Declared Ramsar wetlands	Riverine	50	100	1000	85-110%	6.5-9.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species

Schedule 9— Target values for target application zones

Target application zones (Target assessment)	Water-dependent ecosystem	Ecosystem Type	Turbidity (NTU) (Annual median)	Total Phosphorus (µg/L) (Annual median)	Total Nitrogen (µg/L) (Annual median)	Dissolved oxygen (mg/L; or saturation (%)) (Annual median within the range)	pH (Annual median within the range)	Salinity (mg/L)	Temperature (Monthly median within the range)	Pesticides and other contaminants (values in table 3.4.1 of the ANZECC Guidelines for) (Must not be exceeded)
		Non-riverine with permanent water	20	10	350	90 – 110%	6.5 - 8.0		between the 20%ile and 80%ile of natural monthly water temperature	the protection of 99% of species
	Other water-dependent ecosystems	Riverine and non-riverine	50	100	1000	85-110%	6.5-9.0	End-of-Valley targets in Appendix 1 of Schedule B to the Agreement	between the 20%ile and 80%ile of natural monthly water temperature	slightly to moderately disturbed systems

Schedule 10—Basin Plan outcomes and reporting requirements

Note: See sections 12.04 and 12.05.

In this Schedule, **CEWH** means the Commonwealth Environmental Water Holder.

Item	Basin Plan outcomes	Reporter	First report	Subsequent reports
	<i>Basin Plan as a whole</i>			
1	Risks to water resources and risk management actions are identified and included in appropriate planning instruments across the Murray-Darling Basin.	Basin States, Authority	2017	Every 5th year
2	Measures have enabled a transition to long-term average sustainable diversion limits.	Department	2012	Annually, until complete
3	Local knowledge and solutions inform the implementation of the Basin Plan.	Department, Basin States, Authority	2012	Every 3rd year
4	Risks to water resources in the Murray-Darling Basin are effectively managed through implementation of the management actions in appropriate planning instruments.	Basin States, Authority	2017	Every 5th year
5	There is transparent and effective management of the water resources of the Murray-Darling Basin.	Authority	2015	Every 3rd year
6	Social, environmental and economic outcomes are optimised.	Department, Authority	2015	Every 3rd year
	<i>Environmental watering plan</i>			
7	The environmental management framework is implemented.	Basin States, CEWH, Authority	2013	Every 3rd year

Item	Basin Plan outcomes	Reporter	First report	Subsequent reports
8	<p>During each water accounting period:</p> <ul style="list-style-type: none"> a) held environmental water is identified; and b) held environmental water released or used to achieve environmental outcomes is recorded, including the volumes, timing (frequency and duration), location and flow rates of that water. 	Basin States, CEWH, Authority	2013	Annually
9	<p>During each water accounting period:</p> <ul style="list-style-type: none"> a) planned environmental water is managed in accordance with the rules of relevant water resource plans; and b) planned environmental water released or used to achieve environmental outcomes is recorded, including the volumes, timing (frequency and duration), location and flow rates of that water. 	Basin States	2019	Annually
10	Progress is made towards achieving ecological targets and objectives for priority environmental assets and ecosystem functions as set out in long term watering plans.	Basin States, CEWH	2015	Every 3rd year
11	Progress towards achieving the objectives specified in Part 2 of Chapter 7 is assessed in accordance with Part 3 of Chapter 7.	Authority, CEWH	2015	Every 5th year
12	The ecological and other values of water-dependent ecosystems in the Murray-Darling Basin are protected and restored so that the ecosystems remain healthy in a changing climate.	Authority	2017	Every 5th year

Item	Basin Plan outcomes	Reporter	First report	Subsequent reports
	<i>Water quality and salinity</i>			
13	Decisions relating to management of water flows are made having regard to the targets referred to in subsection 8.11(5).	Basin States, Authority, CEWH	2016	Every 5th year
14	Water quality and salinity trigger points at which water in the River Murray System becomes unsuitable for critical human water needs are determined and emergency responses for managing events are in place.	Basin States, Authority	2013	Annually
15	Implementation of the measures identified in a WQM Plan is enabling progress towards meeting the objectives in Chapter 8 - as informed by whether the targets specified in the WQM Plan are being met.	Basin States	2019	Every 5th year
16	There is a low risk that Basin water resources will be unfit for use, consistent with the water quality objectives in Part 3 of Chapter 8.	Authority	2019	Every 5th year
	<i>Water trading rules</i>			
17	Measures required to implement the trading rules are identified and implemented in each Basin State.	Basin States	2013	Annually
18	Trading rules and information are transparent and available.	Basin States, Authority	2015	Every 3rd year
19	Trading rules operate efficiently and effectively.	Basin States, Authority	2015	Every 3rd year
20	Water markets operate more efficiently and effectively to facilitate tradeable water rights to reach their most valued use.	Authority	2016	Every 5th year

Schedule 10—Basin Plan outcomes and reporting requirements

Item	Basin Plan outcomes	Reporter	First report	Subsequent reports
	<i>Water resource planning</i>			
21	There are accountable and transparent arrangements for water sharing.	Basin States, Authority	2019	Every 5th year
22	Risks to Basin water resources are assessed, and management strategies identified, at water resource plan area scale.	Basin States	2018	Every 5th year
23	Critical human water needs are prioritised.	Basin States	2013	Annually
24	Water resource plans minimise the risk to water quality targets being exceeded.	Basin States	2019	Every 5th year
25	There is compliance with water resource plans.	Basin States	2020	Annually
26	Water resource plans operate efficiently and effectively providing a robust framework under a changing climate.	Basin States, Authority	2022	Every 3rd year
27	Enduring, credible and widely understood water sharing arrangements throughout the Murray-Darling Basin provide certainty of access to all users and to the wider community under a changing climate.	Authority	2017	Every 5th year
28	The management outcome described in subsection 5.05(2) is achieved.	Authority	2016	Every 5th year